



Mental Workload and Work Stress in Intensive Care Nurses at Mitra Sejati General Hospital Medan

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Article details:

Published: 30th June 2025



Abstract

The quality of hospital services is largely determined by human resource factors, one of which is intensive nursing staff, where nurses in carrying out their profession often experience stress. One of the factors associated with work stress in intensive care nurses is mental workload. This study aims to describe mental workload and work stress, and analyze the relationship between mental workload and work stress in intensive care nurses at Mitra Sejati General Hospital Medan. This type of research is an analytic

survey with a cross sectional design. This research was conducted at Mitra Sejati General Hospital Medan for 3 months. The population of this study were all nurses in the ICU and NICU-PICU room at Mitra Sejati General Hospital as many as 44 nurses. The research sample consisted of 44 nurses in the ICU and NICU- PICU room at Mitra Sejati General Hospital Medan with a sampling technique using total sampling. Data collection was carried out by interview using a questionnaire. The data analysis method used univariate analysis with frequency, and bivariate analysis with Pearson correlation test. The results of this study showed that as many as 30 people (68.2%) intensive nurses experienced high mental workload, and as many as 27 people (61.3%) intensive nurses experienced severe work stress. There is a significant relationship between nurses' mental workload and work stress in intensive nurses (p value = 0.001), showing a very strong relationship (r value = 0.794), and a positive pattern, which means that the higher the mental workload, the higher the work stress of intensive nurses. The suggestion for the management of Mitra Sejati General Hospital Medan is for the management to provide motivation and appreciation to nurses as a form of support in dealing with mental workload that can trigger work stress.

Keywords: Workload, Work stress, Intensive care nurse

To cite this article

Hanny Siagian, Frits Gordon Lumban Gaol, G. S. (2025). Mental Workload and Work Stress in Intensive Care Nurses at Mitra Sejati General Hospital Medan. *International Journal of Health, Education and Social (IJHES)*, 8(6), 66–78.



Introduction

Hospitals are defined as health care institutions that organize comprehensive individual health services that provide inpatient, outpatient, and emergency services (Regulation of the Indonesian Minister of Health Number 30 of 2019 concerning Hospital Classification and Licensing). The success of a hospital in carrying out its functions is characterized by an increase in the quality of hospital services. The quality of hospital services is strongly influenced by several factors, the most dominant factor is human resources, one of which is nursing staff (Galuh, et.al., 2023).

Nurses are one of the spearheads of health services in hospitals because nurses in hospitals are in charge of almost all sectors including integrated inpatient services, intensive care, outpatient or polyclinic and emergency services. Health services include a sustainable bio-psycho-social-spiritual approach (Badri, 2020).

Nurses in the intensive care unit are different from nurses in other departments, the level of work and knowledge of intensive care nurses is more complex compared to nurses in other departments in the hospital because intensive care nurses are responsible for maintaining patient homeostatis to fight through critical or terminal conditions that are close to death (Kusuma, 2015; Cha et.al., 2022).

Nurses as providers of nursing care, in carrying out their profession often experience stress related to their work (Kristina and Muryadi, 2022). In general, nurses who experience work stress will manifest themselves in various abnormal behaviors such as nervousness, tension, anxiety, indigestion, and high blood pressure (Kusumaningrum, et.al., 2022; Difibri, et.al., 2021).

According to Andrianti, et.al. (2019), nurses have a high prevalence of work-related stress, there are 67% of nurses experiencing high stress in health services, while work stress in nurses ranks at the top of forty cases of work stress in Indonesia (Andrianti, et.al., 2019). The Indonesian National Nurses Association (2018), revealed as many as 50.9% of Indonesian nurses who work experience work stress, many factors cause work stress, and the most important cause is workload



(44%) apart from social support (14%), violence, threats and bullying (13%), and changes in the workplace (8%) and possibly other factors (20%) (Pongantung et.al., 2019).

The onset of stress in nurses can be influenced by several factors, one of which is a high mental workload, the increasing workload of nurses will increase the level of stress in nurses. Nurses are required to concentrate and act quickly in serving patients, especially nurses in the intensive room (Padila and Andri, 2022).

Mitra Sejati General Hospital Medan is a health service facility that works for 24 hours with a bed capacity in the Intensive Care Unit (ICU) room of 20 beds (18 non-isolation beds and 2 isolation beds) and the Neonatal-Pediatric Intensive Care Unit (NICU-PICU) room of 10 beds (9 non-isolation beds and 1 isolation bed). Mitra Sejati Hospital's 24- hour health services organize work activities with a shift system. Working hours for the first shift are at 21.00 - 09.00 (12 hours), second shift at 09.00 - 15.00 (6 hours), third shift at 15.00 - 21.00 (6 hours) and non-shift nurses work at 08.00 - 16.00 (6 hours).

The number of nurses in the ICU room at Mitra Sejati General Hospital Medan is 27 nurses where the shift system in the ICU room each shift group consists of 5 people, 4 field nurses and 1 nurse in charge who coordinates the duty team. While the number of nurses in the NICU-PICU room at Mitra Sejati General Hospital Medan is 17 nurses, with a shift system consisting of each shift group.

Intensive care installation nurses at Mitra Sejati General Hospital Medan are prone to experiencing high mental workload, this is due to the requirement of each nurse to be responsible for 3-5 patients in the ICU room every day, with an average daily number of patients treated 15-18 patients in the ICU room and an average daily number of 6-8 patients in the NICU-PICU room. This condition indicates an imbalance between the ratio of nurses and patients treated, resulting in mental workload on nurses.

Mental workload is a difference between capacity and ability in performing work or responsibility tasks (Destiani, et.al., 2020). Mental work of nurses is a complex job in preparing mentally and spiritually patients and their families during critical situations (Yudi et al., 2019).



Mental workload often occurs or has a high potential to be experienced by nurses working in ICU and NICU-PICU rooms (Sarsangi et.al., 2017; Maghsud, et.al., 2020).

One measurement of mental workload in nurses uses a widely used subjective method, namely the *National Aeronautics and Space Administration Task Load Index* (NASA-TLX), where aspects of mental workload can be reviewed from NASA-TLX, namely *Mental Demand* (MD), *Physical Demand* (PD), *Temporal Demand* (TD), *Performance* (P), *Frustration Level* (FR) and *Effort* (EF) (Nurfajriah, et.al., 2017).

Based on several research studies conducted on nurses working in the ICU room have a high mental workload. This is evidenced by the research of Padila & Andri (2022), in the intensive care room, it was found that the mental workload of nurses in the ICU room was high, namely 73.24%. Meanwhile, research by Wihardja, Hariyati, & Gayatri (2019), also stated that nurses in the ICU room had a high mental workload reaching 54.3%. In line with research conducted by Safitri and Astutik (2019), that nurses who work in the ICU room experience an increase in mental workload reaching 82.33%. This is because nurses in the intensive care unit are prone to experiencing higher responsibility stress than other rooms which causes pressure for nurses both physically and mentally (Sigit, et al., 2022).

Work stress in nurses is very noteworthy, because if a nurse experiences high work stress it will have an impact on the quality of service. One of the causes of work stress is mental workload, therefore this study aims to analyze the relationship between mental workload and work stress in intensive care nurses at Mitra Sejati Hospital Medan.

Methods

This type of research is an analytic survey with a cross sectional design. The research was conducted in the ICU and NICU-PICU rooms of Mitra Sejati General Hospital Medan for 3 months. The study population was all nurses in the ICU, NICU-PICU room as many as 44 nurses consisting of 27 nurses in the ICU room and 17 nurses in the NICU-PICU room, and the study sample was the total population. Data collection was conducted by interview using a questionnaire



containing closed questions that must be answered by respondents, namely the *National Aeronautics and Space Administration Task Load Index* (NASA-TLX) questionnaire to assess mental workload and *Psychometric Properties of the Depression Anxiety Stress Scale-42* (DASS-42) to assess stress in intensive care nurses at Mitra Sejati Hospital Medan. Data analysis methods used univariate analysis with frequency distribution, and bivariate analysis with Pearson correlation test.

Results

Characteristics of Intensive Care Nurses at Mitra Sejati General Hospital Medan

The characteristics of intensive care nurses at Mitra Sejati Hospital Medan include age, gender, education, and ward. The frequency distribution analysis of the characteristics of Intensive care nurses at Mitra Sejati Hospital Medan is as follows:

Table 1. Frequency Distribution of Intensive Care Nurses at Mitra Sejati General Hospital Medan

Intensive Care Nurse Characteristics	n	%
Age		
20-29 years	24	54.5
30-39 years	18	41.0
> 40 years	2	4.5
Gender		
Male	8	18.2
Female	36	81.8
Education		
D-III nursing	34	77.3
Nursing profession	10	22.7
Room		
ICU	27	61.4
NICU-PICU	17	38.6

Based on table 1, it is known that the age characteristics of intensive care nurses at Mitra Sejati General Hospital Medan, as many as 24 people (54.5%) nurses aged between 20-29 years, as many as 18 people (41.0%) nurses aged between 30-39 years, and as many as 2 people (4.5%) nurses aged > 40 years. Gender characteristics of intensive care nurses at Mitra Sejati General Hospital Medan, as many as 8 people (18.2%) nurses who are male, and as many as 36 people



(81.8%) nurses who are female. Education characteristics of intensive care nurses at Mitra Sejati General Hospital Medan, 34 people (77.3%) of nurses have a D-III Nursing education, and 10 people (22.7%) of nurses have a Ners profession education. Characteristics of the intensive care unit at Mitra Sejati Hospital Medan, 27 people (61.4%) of nurses were in the ICU room, and 17 people (38.6%) of nurses were in the NICU-PICU room.

Mental Workload in Intensive Care Nurses at Mitra Sejati General Hospital Medan

Analysis of the frequency distribution of mental workload in intensive care nurses at Mitra Sejati General Hospital Medan as follows:

Table 2. Frequency Distribution of Mental Workload on Intensive Care Nurses at Mitra Sejati General Hospital Medan

Mental Workload	n	%
Very high	11	25.0
High	30	68.2
Somewhat high	2	4.5
Medium	1	2.3
Total	44	100.0

Based on table 2, it is known that the mental workload of intensive nurses at Mitra Sejati General Hospital Medan is 11 (25.0%) nurses have a very high mental workload, 30 (68.2%) nurses have a high mental workload, 2 (4.5%) nurses have a rather high mental workload, and 1 (2.3%) nurse have a moderate mental workload.

Job Stress in Intensive Care Nurses at Mitra Sejati General Hospital Medan

Analysis of the frequency distribution of work stress in intensive care nurses at Mitra Sejati General Hospital Medan as follows:

Table 3. Frequency Distribution of Mental Work Stress in Intensive Care Nurses at Mitra Sejati General Hospital Medan

Work Stress	n	%
Very heavy	12	27.3
Weight	27	61.3
Medium	5	11.4
Total	44	100.0



Based on table 3, it is known that work stress in intensive care nurses at Mitra Sejati General Hospital Medan that as many as 12 people (27.3%) nurses have very severe work stress, as many as 27 people (61.3%) nurses have severe work stress, and as many as 5 people (11.4%) nurses have moderate work stress.

Relationship between Mental Workload and Job Stress in Intensive Care Nurses at Mitra Sejati General Hospital Medan

Analysis of the relationship between mental workload and work stress in intensive care nurses at Mitra Sejati General Hospital Medan as follows:

Table 4. Relationship between Mental Workload and Work Stress in Intensive Care Nurses at Mitra Sejati General Hospital Medan

Correlation Between Variable	Work Stress		
	n	r	p-value
Mental Workload	44	0.794	0.001

Based on table 4, the value of $r = 0.794$ is obtained, it can be concluded that the relationship between mental workload and work stress in intensive nurses at Mitra Sejati General Hospital Medan shows a very strong and positive relationship, which means that the higher the mental workload, the higher the work stress of intensive nurses at Mitra Sejati General Hospital Medan. The statistical test results obtained p-value (0.001), meaning that there is a significant relationship between mental workload and work stress in intensive nurses at Mitra Sejati General Hospital Medan.



Based on aspects of mental workload, it can be seen which aspects are most related to work stress in intensive care nurses at Mitra Sejati General Hospital Medan as shown in table 5 below.

Table 5. Relationship between Each Aspect of Mental Workload and Work Stress in Intensive Care Nurses at Mitra Sejati General Hospital Medan

Correlation Between Variable	Work Stress		
	n	r	p-value
Mental Demand	44	0.335	0.026
Physical Demand	44	0.365	0.015
Temporal Demand	44	0.338	0.025
Performance	44	0.405	0.006
Effort	44	0.324	0.032
Frustration Level	44	0.323	0.033

Based on table 5, it can be concluded that the aspects of workload that are most related to work stress in intensive care nurses at Mitra Sejati General Hospital Medan are performance, physical needs, time needs, mental needs, level of effort, and level of frustration.

Discussion

Mental Workload in Intensive Care Nurses at Mitra Sejati General Hospital Medan

Most of the intensive care nurses at Mitra Sejati General Hospital Medan had a high mental workload of 68.1%. The workload of nurses in intensive care installations is higher than nurses in other care units because the conditions of the patients they treat are more complex and require more intensive attention (Purnamasari, et.al., 2018; Ruiz et.al., 2022).

Nursing is a profession that involves many responsibilities and tasks that require high mental workload. Nurses' mental workload can occur due to the demands of complex tasks and situations, and requires high concentration and attention in a relatively short time.

The results of this study are in line with the research of Padila and Andri (2022), stating that it was found that the mental workload of nurses in the ICU room was high at 73.24%, as well as the research of Wihardja, Hariyati, and Gayatri (2019), also stating that nurses working in the ICU room had a high mental workload reaching 54.3%. In line with research conducted by Safitri



and Astutik (2019), that nurses who work in the ICU room experience an increase in mental workload reaching 82.33%.

To reduce nurses' mental workload, it is important to provide sufficient emotional and psychological support, provide necessary training and skill development, and organize better and structured working time. In addition, efforts should also be made to improve the quality of nurses' work environment, such as by providing adequate health and safety facilities and reducing unnecessary stress factors (Sigit, et.al., 2022).

Work Stress in Intensive Care Nurses at Mitra Sejati General Hospital Medan

Most of the intensive care nurses at Mitra Sejati General Hospital Medan have a high stress level of 72.7%, which allows nurses who work in intensive care installations to have high stress levels because they have great responsibility. The intensive care unit nurses have a great responsibility for the health of patients. Stress in nurses is a condition where nurses feel overburdened with their duties and responsibilities. Stress can cause nurses to feel exhausted, anxious and depressed, which in turn can affect the quality of patient care and the physical and mental well-being of the nurses themselves.

Nurses must closely monitor the patient's condition and provide timely care, when the patient's condition worsens or has a potentially life-threatening medical incident, nurses often feel pressured and responsible to take action as quickly as possible to save the patient's life. This responsibility can cause stress in nurses because they have to work quickly without any mistakes (Rizkianti and Haryani, 2020).

The results of this study are in line with the research of Pongantung et.al., (2019), explaining that stress in nurses is a condition in which nurses feel overburdened with their duties and responsibilities. Stress can cause nurses to feel exhausted, anxious, and depressed, which in turn can affect the quality of patient care and the physical and mental well-being of the nurses themselves.



Relationship between Mental Workload and Work Stress in Intensive Care Nurses at Mitra Sejati General Hospital Medan

There is a significant relationship between nurses' mental workload and work stress in intensive care nurses at Mitra Sejati General Hospital Medan, this is because the higher the mental workload in nurses, the greater the level of risk of work stress experienced. This will have an impact on the safety of nurses and patients.

This study is in line with Kusuma's research (2021) which states that there is a significant relationship between nurses' mental workload and work stress in intensive nurses at Al-Ihsan General Hospital, West Java Province, where too high workload can be caused by the inability of nurses to complete nursing actions according to the specified time standards, so that this can trigger work stress. The heavier the workload experienced, the more at risk nurses experience work stress and vice versa, the lighter the workload, the further nurses experience work stress.

The results of this study are reinforced by the research of Wicaksono et.al. (2023) which states that there is a significant relationship between heavy workload and work stress, where workloads that are not proportional to physical abilities, experience and expertise and the time available to nurses will result in work stress.

Excessive mental workload on nurses can potentially cause work stress (Nasirizad et.al., 2020). Nurses who experience work stress will cause a decrease in performance both effectively and efficiently due to reduced physical and cognitive abilities which can occur due to an imbalance between the number of patients and the number of nurses on duty, thus nurses get more workload than the maximum ability possessed by nurses (Ahmadi, et.al., 2021).

Conclusion and Recommendation

Based on the results of the study, it can be concluded that intensive nurses at Mitra Sejati Hospital Medan experienced the most mental workload in high mental workload with a total of 30 people (68.2%) nurses, and experienced the most work stress in severe work stress with a total of 27 people (61.3%) nurses. There is a significant relationship between nurses' mental workload and



work stress in intensive care nurses at Mitra Sejati General Hospital Medan. Suggestions for the management of Mitra Sejati General Hospital Medan that it is expected to provide work motivation support and appreciation so that intensive nurses are enthusiastic and perform well. Intensive nurses should make a priority scale of work accompanied by a series of work completion sequences, make good use of rest time, and not consider the work at hand as a mental workload that can trigger work stress.



International Journal of Health, Education and Social (IJHES)



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