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Emergency Service Response Time Performance Analysis in the Hospitals with Level Two Health Facilities: Comparative Study

Exda Hanung Lidiana[1], Arum Pratiwi[2]*, Sugiharto[3]

[1]*Magister Keperawatan, Fakultas Ilmu Kesehatan Universitas Muhammadiyah Surakarta, 57169, Indonesia*
[2]**Fakultas Ilmu Kesehatan, Universitas Muhammadiyah Surakarta, 57169, Indonesia*
[3]*Fakultas Ilmu Kesehatan Universitas Muhammadiyah Pekajangan Pekalongan, 51172, Indonesia*
*correspondence: *ap140@ums.ac.id*

Abstract: *The Emergency Unit (ER) is a part of the hospital that provides rapid treatment for patients according to the severity of their condition. Response time is the speed of the medical team in the ER in treating patients, starting from the moment the patient arrives until medical action is given. Fast and precise response time can reduce the complications that can arise and the patient's cost burden. The number of patients and the number of nurses that are not comparable can affect the response time of nurses. Research observing and comparing response times is still minimal. This study aims to determine the difference in service response time in the ER in two hospitals with second-level health facilities. This type of research is quantitative using a descriptive comparative approach. The research method uses observation and questionnaire methods. Data collection directly using the stopwatch tool. Sampling was done using the accidental sampling technique. Data analysis used the difference between two means tests with Mann-Whitney. Observations were carried out on nurses in the emergency room totaling 52 observations in each hospital for three months. The analysis results show a value of P = 0.688, where this probability value is more than 0.05, so the hypothesis fails to be rejected, so it can be concluded that statistically there is no significant difference in the Response Time of nurses in the two Emergency Units. Nurses must provide a response time according to the regulations set by the Ministry of Health, namely less than five minutes.*

Keywords*: emergency room, nurse, response time*

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INTRODUCTION

The Emergency Unit (ER), according to the Republic of Indonesia Minister of Health Regulation (2018), is one of the service units in hospitals that provides initial treatment for those suffering from illness or injury that can threaten their survival (Merliyanti et al., 2024). Emergency management has a philosophy, namely, Time Saving is Live Saving, which means that all treatment during an emergency must be effective and efficient because patients can lose their lives in a matter of minutes. The ER has clinical performance indicators, namely response time for emergency services or response time (Anggraini & Febrianti, 2020).

Response time is the speed of the health team in the ER in treating patients, from the time the patient arrives until the patient is given an action according to the level of emergency (Todang & Silaban, 2023). Response time is categorized as fast if service is provided to patients in less than 5 minutes. Fast and precise response times can reduce complications and patient costs (Harahap et al., 2022). The accuracy of the nurse's response time when providing treatment to the patient must be under the time determined based on triage. Response time is the speed of serving or taking action quickly on patients in the ER. The response time of nurses is limited to only 10 minutes. The Ministry of Health

regulations (2009) and the research of Harahap et al. (2022) have established one of the principles regarding handling emergency patients who must be treated no later than 5 (five) minutes after arriving at the ER (Harahap et al., 2022). A study found that there was a relationship between nurse response time and emergency services in the ER (Prahmawati et al., 2021). Other research states that there is a relationship between knowledge and training and the response time of medical staff in the emergency room (Husen & Rahman, 2020).

Service in the emergency unit can be related to several things, one of which is that work experience does not guarantee that someone will carry out treatment more quickly than someone with little experience (Munir et al., 2022). Other research also states that there is no difference in time in nursing actions in critical rooms between senior and junior nurses (Pratiwi, et al., 2022). On the other hand, the advantage of having work experience is that you can improve your skills in handling patients due to doing the same repetitive work, and you can understand the division of tasks between nurses more systematically (Pratiwi, et al., 2022). Appropriate waiting times require nurses on duty in the emergency room to standardize the speed and accuracy of handling patients, and nurses who are trained in handling patients are required. Nurses who have longer work experience will tend to carry out actions more carefully so that treatment time becomes more effective (Munir et al., 2022).

Interviews conducted in June 2023 with ten nurses who work in the emergency room of a private hospital can conclude that the standard response time for nurses is, on average, less than 5 minutes; this is because the number of patients who come to the emergency room and the number of nurses are comparable. Meanwhile, five respondents from government hospitals said that the response time service standard of less than 5 minutes was not achieved every time; this was because the number of patients was not comparable to the number of nurses. Currently, there are still many variations and incidence rates that show the slow response of health workers to serving patients. Several studies have found that many services in emergency units are late and have not shown satisfaction levels, as research conducted by Krismantoro & Siagian (2023) shows that there is no significant relationship between emergency response time in the ER and the level of patient satisfaction (Krismantoro & Siagian, 2023). According to Hidayat et al. (2020), overcrowding in the ER has negative impacts. On health services (Hidayat et al., 2020). Other research shows that there is no influence between patient introduction and response time (Erwin et al., 2021). Emergency management has a philosophy, namely Time Saving, which is Live Saving, which is related to clinical performance indicators, namely response time for emergency services (response time). Response time is categorized as fast if service is provided to patients in less than 5 minutes quickly and accurately. It can reduce the extent of damage to the patient's internal organs and the patient's cost burden, so it is important to research the differences in response time for health care services in two emergency rooms between two hospitals with second-level health facilities.

METHODS

This type of research is quantitative using a descriptive comparative approach. The research method uses observation and questionnaire methods using a stopwatch measuring instrument. The population in this study was all nurses who worked in the ER at two hospitals with second-level health facilities. This research meets the requirements of the Ethical Clearance Letter number 4931/B.1/KEPK-FKUMS/VIII/2023. Sampling was taken using an accidental sampling technique, which means the samples were nurses found in the ER. Collecting data on the characteristics of respondents in two hospitals with a total of 30 nurses, then in collecting response time data in this study, accidental observations were made 52 times on nurses in each hospital for three months from July - September 2023.

The instruments used in this research were observation sheets and questionnaires. The observation sheet contains the respondent's code and the nurse's response time in providing services in the ER using a stopwatch measuring instrument, while the questionnaire contains the response characteristics

consisting of gender, age, highest level of education, length of time working in the ER, training and response time.

This research journey began with a preliminary study to find out the current problems, then coordinating with the two related hospitals regarding the research plan, then preparing a proposal and submitting an Ethical Clearance Letter so that further research could be carried out. After the Ethical Clearance Letter was issued, the researchers coordinated and collected data directly at the two hospitals. After the data was obtained, the researchers then carried out data analysis.

The analysis of this research used the Mann-Whitney difference between the two means test because the researchers only made observations or observed the response time of nurses in providing services to patients admitted to the ER.

RESULTS

Table 1. Frequency distribution of characteristics of respondents from Government Hospitals (A) and Private Hospitals (B)

Characteristic	Hospital A f (%)	Hospital B f (%)	N
Gender			
Male	5 (38)	6 (35)	11
Female	8 (62)	11 (65)	19
Age			
20 - 30 yo	5 (39)	3 (18)	8
31 – 40 yo	6 (46)	10 (59)	16
41 – 50 yo	2 (15)	4 (23)	6
Education			
Diploma	11 (85)	12 (71)	23
Professional	2 (15)	5 (29)	7
Length of Work in ER			
≤ 3 years	13 (100)	1 (6)	14
> 3 years		16 (94)	16
Emergency Training			
Available	11 (85)	11 (65)	22
N/A	2 (15)	6 (35)	7
Response Time			
≤ 5 Seconds	4 (31)	3 (18)	7
>5 Seconds	9 (69)	14 (82)	23

According to Table 1, most nurses working in emergency rooms at government and private hospitals are female. They are also between 31 and 40 years old. They also have a D3 nursing education. For the time working in the emergency room of government and private hospitals, the majority is less than 3 years, and in private hospitals, the majority is more than 3 years. Then, the characteristics based on emergency training are that the majority have training and response time in the emergency department of government hospitals ≤ 5 seconds, while in the emergency department of private hospitals, the majority is > 5 seconds.

Table 2 shows that the majority of those working in the emergency room who have worked for less than three years have a response time of fewer than five seconds 79% and those who have worked more than three years have a response time of fewer than five seconds by 75%; then it is known that the Asymp value. Sig (2-tailed) is = 0.718, so the Sig value. (2-tailed) > 0.05, then Ho is accepted; in other words, there is no relationship between Response Time and length of work in the ER.

Table 2. Chi-Square Response Time Results with Length of Work

Length of working	*Response Time*		*ρ*
	<5 second	*>5 second*	
> 3 years	*3 (21%)*	*11 (79%)*	.718
< 3 years	*4 (25%)*	*12 (75%)*	

Table 3. Test results for the difference between two means using Mann-Whitney

Hospital	*Response Time*		*ρ*
	<5 second	*>5 second*	
A	*7 (64%)*	*45 (48%)*	.688
B	*4 (36%)*	*48 (50%)*	

Table 3 shows that the majority of those who work in Hospital A have a response time of more than five seconds, 64%, while in Hospital B, the majority of response times are less than 50%. It is known that the p-value = 0.688 (> 0.05); this shows no significant difference in Response Time between the ER at Hospital A and the ER at Hospital B.

DISCUSSION

The results of this study describe that the majority of nurses working in the emergency rooms of government hospitals and private hospitals are female. This result is supported by research by Husen and Rahman (2020) who conducted research related to nursing staff, finding that the majority were female (Husen & Rahman, 2020). This is in line with research by Nurcholis et al. (2022), which showed that as many as 26 respondents (68%) were female. Due to the perception that women are more capable and conscientious in carrying out their nursing duties and more patient in dealing with the various characteristics of patients and families, this result demonstrated that women continue to dominate the nursing profession in Indonesia (Nurcholis et al., 2022). In contrast, male nurses predominate in China (Zhang & Tu, 2020), and almost all nurses working in orthopedic emergency rooms are male (Dineen et al., 2019).

Research on nurses who work in emergency rooms at government hospitals and private hospitals shows that most respondents are aged 31–40 years, based on the age characteristics of the respondents. According to the Indonesian Ministry of Health in Research (Amin & Juniati, 2017), ages 26–35 are in the early adulthood category, and 36–45 are in the late adulthood category. The majority of respondents in this study fell into the categories between early adulthood and late adulthood. The research results of Nursanti supported these results (Nursanti & Dinaryanti, 2022), showing that the majority of 28 respondents (70%) were aged 26–35 years. In line with research (Harahap et al., 2022), it is known that the majority of respondents' age is 26–35 years, namely 20 respondents (33%). Through this data, it can be seen that many young nurses dominate, so they are likely to have high motivation and good productivity when compared to older nurses (Binuko & Fauziyah, 2022). Apart from that, according to Zulkifli et al. (2019), the older a person is, the older a worker is, the higher the likelihood of suffering from work stress (Zulkifli et al., 2019). Older workers tend to have poorer health conditions than younger workers. Nurses who experience work stress will sometimes feel complaints such as ulcers (gastritis), irregular bowel movements (diarrhea), increasingly pronounced muscle tension, feelings of unease and emotional tension, and sleep pattern disturbances (insomnia), for example, difficulty starting to sleep (early insomnia), waking up in the middle of the night and having difficulty going back to sleep (middle insomnia), waking up too early in the morning and not being able to go back to sleep (late insomnia), and body coordination is disturbed (the body feels like it is going to faint).

Research on nurses who work in the emergency rooms of government hospitals and private hospitals shows that the majority of respondents' educational characteristics have a D3 degree in nursing. Research (Nurzaman et al., 2021) supports the results of this study, revealing that up to 19 respondents (91%) completed their final education in diploma nursing. This data shows that there are more nurses with diploma nursing degrees in the emergency room compared to professional nurses. Nurse professional education is one of the demands for increasing competency; apart from that, a person's high level of education will make them more rational and creative in accepting various changes in hospital management. However, a shortage of professional nurses persists due to various factors, including the high cost of education. Generally, education plays a significant role in shaping a nurse's knowledge and decision-making skills, enabling them to respond promptly and accurately in accordance with established standards.

The majority of nurses working in the emergency rooms of government hospitals have ≤ 3 years of experience. Research (Binuko & Fauziyah, 2022) supports these results, indicating that the majority of nurses have worked for 1-3 years. This working period is still relatively new, so this will clearly affect the services provided. The longer the work period, the better the person will be able to provide service to patients. Meanwhile, in private hospitals, based on length of work in the ER, the majority of respondents were more than three years old—16 respondents (94%). Research Khotimah et al.'s (2022), supports these results by demonstrating that the majority of nurses have worked for more than three years. Given that private hospitals prioritise services to attract customers or patients, a lengthy working period can impact the services provided, leading to regulations on the working period of emergency room nurses (Khotimah et al., 2022). According to (Karokaro et al., 2020) research, one of the factors influencing response time is the length of the work period. Research by Pratiwi, Sukardi, et al., (2022) provides support, demonstrating that there was no significant difference in the duration of nursing actions between senior and junior nurses. However, this study discovered a correlation between the workload of nurses in the intensive care unit and direct nursing actions (Pratiwi, Arif, et al., 2022). A nurse's work period can improve skills and knowledge because the longer the nurse's work period, the more quickly and precisely the nurse can carry out treatment. However, even with extensive experience, nurses need to participate in training to acquire new knowledge and the most up-to-date case-handling techniques. Education can also facilitate the acquisition of new knowledge. Higher educated nurses possess a wider perspective, fostering a more sophisticated mindset compared to those with less education.

Research on nurses who work in the emergency rooms of government hospitals and private hospitals shows that the majority of their characteristics are based on emergency training. These results are supported by research (Togatorop, 2019) showing that the majority of nurses working in the ER have emergency training, with 25 respondents (83%). Both emergency rooms show that the majority of nurses working in them have emergency training. Implementing professional nursing services using simulation or training methods can increase knowledge from 32.65% to 72.06%, meaning that through this simulation training method, nurses can increase nursing professionalism (Pratiwi, Sukardi, et al., 2022). Emergency training is important for nurses who work in the ER because nurses must update their competency or knowledge through training activities to improve their abilities and improve employee performance in carrying out their duties. Nurses in the ER have at least PPGD, BTCLS, and BHD training in order to improve their specific expertise, knowledge, skills, attitudes, and behavior in handling emergency cases in the ER.

Research on nurses who work in the emergency rooms of government hospitals and private hospitals shows that the characteristics based on the response time of respondents show that the majority of respondents have a response time of > 5 seconds or less than 5 minutes. Harahap et al.'s (2022) research supports this, revealing that 35 respondents (58%) fell into the fast response time category, specifically less than 5 minutes (Harahap et al., 2022). Other research shows that as many as 34 respondents (85%) showed a fast response time (Nursanti & Dinaryanti, 2022). There is no difference

between the two emergency rooms in the two hospitals, which both show fast response times of <5 minutes, according to the standards set by the Ministry of Health of the Republic of Indonesia.

The relationship analysis revealed no significant relationship between the length of work and response time. Based on these results, researchers assume that nurses assigned to the ER must have special competencies so that there is no influence between senior and junior nurses. Meanwhile, the results of the response time data analysis between the two hospitals did not show any significant differences. Based on these results, researchers assume that government hospitals and private hospitals have the same commitment to response time; this is in accordance with the regulation of the Minister of Health of the Republic of Indonesia regarding a good response time for patients, namely less than 5 minutes (Permenkes RI, 2018). Other research shows that there is no significant difference in time for nursing actions between senior and junior nurses (Pratiwi, Arif, et al., 2022). Other studies have shown that factors such as patient arrival, patient priority, the nurse's length of service, and the nurse's education level influence nurse response time (Wiyadi & Rahman, 2020).

CONCLUSIONS

Based on the described analysis results, we conclude that there is no significant difference in the response time for nurses in the two emergency rooms between government and private hospitals, and there is no correlation between the response time and the length of time spent in the ER. Each hospital, following Ministry of Health regulations, requires nurses to maintain a response time of less than 5 minutes. A rapid response time will have a positive impact on patients by reducing the risk of deterioration in their condition. This research's constraint stems from the restricted sample, necessitating further refinement of the results through the addition of more research samples and an increase in the number of hospitals.

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