

The Relationship between Nurse Response Time and Patient Functional Outcomes in the Emergency Room of Baladhika Husada Hospital Jember

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ABSTRACT

Introduction: The Emergency Department (ED) is an important part of a hospital that provides rapid care to patients with emergency conditions. Nurse response time is an important indicator in determining the success of initial patient management. However, patient functional outcomes are not only influenced by the speed of initial action, but also by the long-term recovery process. This study aims to analyze the relationship between nurses' response time and patients' functional outcomes in the ED of Baladhika Husada Jember Hospital, a tertiary-level hospital.

Method: This study employs an observational analytical design with a cross-sectional approach. The study population consists of 356 ED patients in December 2024. The sample size was determined using the Slovin formula, resulting in 188 respondents. The sampling technique employed non-probability sampling of the purposive type. Response time data were collected through observation, while functional outcome data were gathered using a questionnaire. Data analysis was conducted using the Spearman Rho test with a significance level of $\alpha \leq 0.05$.

Result: Most nurses' response times were ≤ 5 minutes (99.5%), and patients' functional outcomes were in the "adequate" category (86.7%). The analysis results showed a significance value (p-value) of 0.703 with a correlation coefficient of 0.028.

Conclusion: There was no relationship between nurse response time and patient functional outcomes in the emergency department of Baladhika Husada Jember Level III Hospital.

Keywords: Response Time; Functional Outcome; Emergency Department

Introduction

Hospitals are an important part of the healthcare system that provides comprehensive services, including medical, rehabilitation, and nursing services (Wisageni et al., 2024). The Emergency Room (ER) is the main entry point for patients with critical conditions who require immediate and appropriate treatment (Akhirul &

Fitriana, 2020). One indicator of service quality in the ED is nurse response time, which is the time it takes for nurses to respond and provide initial treatment to patients. This concept is closely related to the golden time principle, where every second counts for patient safety (Krisnantoro & Siagian, 2023).

Data shows that patient visits to the ED have increased significantly at various levels. The World Health Organization (WHO) in 2022 noted that global ED visits reached 131.3 million people (Rammang & Rahman, 2023). In Indonesia, the Ministry of Health reported 10,124,000 ED visits in 2021, or about 18.2% of total hospital visits in 2,834 hospitals (Kemenkes, 2022). In East Java Province, the number of ED visits reached 16,712,000 (Rohman et al., 2023), with 2,337,600 visits recorded in Jember Regency (Huzaifah & Iswara, 2023), and 7,012 visits to the emergency room of Baladhika Husada Jember Level III Hospital in November 2024 (Husada, 2024).

The increase in the number of visits requires faster, more effective, and more efficient services. Slow response times can have a negative impact on patient conditions (Doondori et al., 2020), such as organ failure in trauma cases, brain damage in hypoxic patients, or infectious complications (Khasanah et al., 2024). These conditions not only prolong recovery time but also reduce quality of life and increase mortality rates (Hariyanto et al., 2024).

Functional outcome is the patient's ability to return to optimal physical, psychological, and social functioning after treatment (Xu et al., 2023). Previous studies have shown that speed in providing treatment is associated with better functional outcomes for patients, with fewer complications and higher satisfaction (Imam et al., 2024). Another study by Nurcholis et al., (2022) explains that slow response times are associated with worsening patient conditions, which not only affects recovery time but also increases costs.

Based on the above description, this study aims to analyze the relationship between nurse response time and patient functional outcomes in the emergency department of Baladhika Husada Jember Level III Hospital.

Method

This study used an analytical observational design with a cross-sectional approach, aiming to analyze the relationship between nurse response time and patient

functional outcomes in the Emergency Room (ER) of Baladhika Husada Jember Level III Hospital. This design was chosen because it allows for the measurement of independent and dependent variables at the same time, in accordance with the research objective which focuses on non-interventional causal relationships.

The population in this study consisted of all patients treated at the emergency department of Baladhika Husada Jember Level III Hospital in November 2024, with a total population of 354 patients. The sampling technique used non-probability sampling with a purposive sampling approach, and the sample size was determined using the Slovin formula with a 5% margin of error, resulting in 188 respondents. Inclusion criteria included: patients who received treatment in the ER, were classified as priority 2 and 3 triage, received nursing intervention, were aged 20–59 years, and were willing to be respondents by signing an informed consent form. Exclusion criteria included referral patients, patients in critical condition or who died before assessment, patients with total immobility, severe mental disorders, or severe communication disorders.

The intervention procedure in this study was non-invasive and consisted only of observing the response time of nurses and the completion of questionnaires by patients. The response time of nurses was measured directly using a stopwatch, starting from the time the patient arrived at the emergency room until the nurse performed initial actions such as checking vital signs, administering intravenous fluids, oxygen, or injections. Patient functional outcomes were assessed using a Guttman scale questionnaire consisting of 9 questions covering physical, psychological, and social functions. This questionnaire was compiled based on a literature review and underwent content validation by nursing experts to ensure the measurability and relevance of the items to the variables under study.

The collected data were analyzed using statistical software. Data processing stages included editing to ensure completeness, scoring to convert qualitative data into quantitative data (with scores of 0 and 1 for favorable and unfavorable questions), coding to group data, entry into a computer program, and data cleaning to remove invalid data. Data analysis was performed univariately to describe each variable and bivariately to test the relationship between nurse response time and patient functional outcome using the Spearman Rho test, with a significance level of $\alpha = 0.05$.

This study has obtained ethical approval from the Health Research Ethics Committee (KEPK) of the Faculty of Health Sciences, Muhammadiyah University of Jember, with a valid ethical letter number. The research was conducted in accordance with the principles of research ethics, namely: informed consent given voluntarily by respondents; anonymity through the use of initials to protect identity; confidentiality of all data obtained; beneficence by ensuring no risk to respondents; nonmaleficence to avoid potential harm; and justice by providing equal treatment to all research participants.

Results

The author presents data from the research results in the form of a frequency distribution table through descriptive sentences for each piece of data produced.

Table 1. Frequency Distribution of Respondents' Ages among Patients in the Emergency Room of Baladhika Husada Jember Level III Hospital (n=188)

Age (years old)	Frequency	Percentage (%)
20-29	98	52,1
30-39	54	28,7
40-49	25	13,3
50-59	11	5,9
Total	188	100

Based on the age distribution table above, it can be concluded that the majority of patients in the emergency room of Baladhika Husada Jember Level III Hospital are aged 20-29 years, with a total of 98 respondents or 52.1%. This shows that patients in the younger age group more often come to the hospital with non-traumatic cases. This is likely related to high physical activity.

Table 2. Frequency Distribution of Respondents' Gender among Patients in the Emergency Room of Baladhika Husada Jember Level III Hospital (n=188)

Gender	Frequency	Percentage (%)
Male	94	50
Female	94	50
Total	188	100

Based on the gender distribution table, the number of male and female respondents at the Emergency Room of Baladhika Husada Jember Level III Hospital showed a balanced proportion, with each group accounting for 50% of the total respondents. This reflects equal gender representation in this study.

Table 3. Frequency Distribution of Response Time of Nurses in the Emergency Room of Baladhika Husada Jember Level III Hospital for 14 nurses with 188 respondents

Response Time	Frequency	Percentage (%)
≤ 5 minutes	187	99,5
> 5 minutes	1	0,5
Total	188	100

Based on the response time frequency distribution table, it can be concluded that the response time of nurses in the emergency room of Baladhika Husada Jember Level III Hospital was mostly <5 minutes for 187 respondents or 99.5%.

Table 4. Frequency Distribution of Functional Outcomes in Patients at the Emergency Room of Baladhika Husada Jember Level III Hospital (n=188)

Outcome Functional	Frequency	Percentage (%)
Good Function	0	0
Adequate Function	163	86,7
Impaired Function	25	13,3
Total	188	100

Based on the frequency distribution table of patient functional outcomes, it can be concluded that the functional outcomes of patients in the emergency room of Baladhika Husada Jember Level III Hospital were mostly adequate, with 163 respondents or 86.7%.

Table 5. Distribution of Total Functional Outcome Scores Based on Indicators in Patients at the Emergency Room of Baladhika Husada Jember Level III Hospital (n=188)

Outcome Functional	Total Activity Performance Score	Percentage (%)
Physical Function	119	63
Psychological Function	180	96
Social Function	180	96
Total	188	100

The table showing the distribution of total functional outcome scores based on indicators in patients at the emergency room of Baladhika Husada Hospital Level III in Jember shows that most patients were unable to perform physical activities, with a total score of 119 or 63% (lowest).

Table 6. Relationship between Nurse Response Time and Patient Functional Outcomes in the Emergency Room of Baladhika Husada Jember Level III Hospital

Nurse Response Time	Patient Functional Outcome						Total	p-value	Correlation Coefficient	
	Good Function		Adequate Function		Impaired Function					
	n	f (%)	n	f (%)	n	f (%)				
≤ 5 menit	0	0	163	87,2	24	12,8	187	100	0,703	0,028
> 5 menit	0	0	0	0	1	100	1	100		
Total	0	0	163	86,7	25	13,3	188	100		

Based on the table, it can be concluded that of the total 188 patients, most of the 187 patients received a nurse response time of <5 minutes. Of this group, 163 patients (86.7%) had functional outcomes in adequate function, and 24 patients (13.3%) were classified as impaired function. There were no patients with good function or response times of more than 5 minutes who showed significant differences.

The statistical test results showed that the p-value was 0.703 ($p > 0.05$) between the nurse response time and the functional outcome of patients, with a correlation coefficient of 0.028 in the very weak positive category. This indicates that there is no significant relationship between the nurse response time and the functional outcome of patients in the emergency department of Baladhika Husada Jember Level III Hospital.

Discussion

Based on the results of the study, almost all patients in the emergency room received a nurse response time of ≤ 5 minutes. Most patients with this response time had adequate functional outcomes, and a small number experienced functional impairment. Meanwhile, one patient who received a response time of > 5 minutes also had impaired functional outcomes. Based on the results according to the indicators, most patients experienced impaired physical functional outcomes. The results of the correlation analysis showed that there was no statistically significant relationship between nurse response time and patient functional outcomes.

In theory, emergency nursing services and rapid response times are believed to help maintain patient stability and prevent complications, especially in acute and life-threatening cases (Prahmawati et al., 2021). However, the effectiveness of nursing services is not only determined by the speed of the nurse's response, but is also greatly influenced by the quality of intervention, the accuracy of the initial diagnosis, and various other clinical factors (Siregar et al., 2020). In the emergency room, nurses play

an important role in carrying out initial interventions in a systematic and standardized manner. One of the earliest steps that must be taken is the measurement of vital signs (VS), including blood pressure, pulse rate, respiratory rate, body temperature, and oxygen saturation. This aims to assess the initial stability of the patient and determine the level of urgency. In addition, nurses are also required to perform rapid triage, monitor the airway, breathing, and circulation, as well as providing initial nursing interventions according to the patient's clinical needs, such as administering oxygen, setting up an IV, controlling pain, and preparing for other emergency measures (Keperawatan et al., 2021).

In general, physical function recovery is a gradual process that goes through several clinical phases, namely acute, subacute, and chronic, with varying durations depending on the patient's condition (He & Wang, 2024). The acute phase typically covers the initial period up to about 1 week after injury or disease onset, where the main focus is medical stabilization and initiating light mobilization. In the subacute phase, which lasts about 1 week to 3–6 months after the event, intensive rehabilitation interventions are carried out to support neuroplasticity and motor function improvement. Finally, the chronic phase begins after approximately 6 months and may continue for 12 months or longer, with functional improvement still possible, albeit at a slower rate (He & Wang, 2024). This study also shows that 80–95% of motor improvement occurs within the first 3–6 months, and peak recovery is often achieved within the first 12 weeks, although continued improvement may still occur in the chronic phase (He & Wang, 2024). Thus, it can be concluded that the acute phase lasts up to 1 week, the subacute phase lasts from 1 week to 3–6 months, and the chronic phase lasts from 6 months to 12 months or more.

According to researchers, although the response time of nurses in this study was in accordance with emergency service standards, the results showed that the speed of service did not have a significant effect on patient functional outcomes. This indicates that response speed does not directly guarantee optimal patient functional recovery, as functional outcomes are complex indicators that reflect the overall results of the entire treatment process. According to Siregar et al., (2020), the success of care is not only determined by the initial response time, but also by the accuracy of interventions, coordination of the healthcare team, and continuous support during the care period. In

the context of emergency services, interventions must be comprehensive, not only rapid but also targeted, in accordance with the patient's clinical priorities (Prahmawati et al., 2021). This can also be explained because physical function recovery is a long-term process that is not only determined by the speed of initial treatment in the ER, but is also influenced by the subsequent rehabilitation phase, which requires weeks to months to achieve significant functional improvement. Therefore, even if speed standards are met, patient functional outcomes remain highly dependent on the quality and relevance of initial nursing interventions, as well as the continuity of post-ED care.

Conclusion

This study aims to analyze the relationship between nurse response time and patient functional outcomes in the Emergency Room (ER) of Baladhika Husada Jember Level III Hospital. The results of the study show that most of the nurses' response times were in the ≤ 5 minute category, and the majority of patients had functional outcomes in the adequate category. However, based on the Spearman Rho statistical test, no significant relationship was found between nurses' response times and patients' functional outcomes.

The strengths of this study lie in the direct measurement of response time using the observation method, as well as the use of instruments that cover physical, psychological, and social dimensions to assess patient functional outcomes. However, this study has several limitations, such as the limited observation time, which was only conducted at one point in time, and the limited scope of patients to one hospital, so the results of the study cannot be generalized widely.

This study opens up opportunities for further research with a longitudinal design or a focus on specific patient groups, such as trauma or stroke patients. Future studies are also recommended to use a more comprehensive approach in evaluating patient outcomes, including the use of more detailed functional assessment instruments and taking into account other clinical factors that may play a role in patient care outcomes in the emergency department.

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