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FULL PAPER

The correlation between service factors and the quality of services among emergency department nurses

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The Emergency Department is crucial for managing acute hospital cases, directly impacting patient survival. The quality of nursing services, shaped by the assurances provided by nurses in emergency settings, has emerged as a key factor in healthcare quality. This study aims to explore the relationship between service guarantees in the Emergency Department and various indicators of service quality, including emergency response times, patient safety incidents, the frequency of IV catheter insertions, and life-saving interventions. This study utilized an observational sheet to collect data across three hospitals- R.S.U.P. Dr Kariadi, R.S.U.D. K.R.M.T. Wongsonegoro, and R.S.U.D. Tugurejo- during May and June 2023. The primary independent variable was the guarantee of emergency department services, while the dependent variables included emergency response time, patient safety incidents, the necessity for multiple IV catheter insertions, and the effectiveness of life-saving measures. Bivariate analysis revealed significant correlations between the guarantee of emergency department services and several quality indicators. Specifically, emergency response time correlated with a p-value of 0.004, patient safety incidents with a p-value of 0.005, IV catheter insertion on multiple attempts with a p-value of 0.000, and accuracy of life-saving actions with a p-value of 0.000, all indicating statistical significance ($p<0.050$). The study confirms a significant correlation between the assurance of services by emergency department nurses and key quality metrics, such as response times, patient safety, efficiency in IV catheter insertion, and life-saving interventions. This underscores the importance of robust service guarantees to enhance emergency care outcomes.

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Introduction

The Emergency Department (ED) serves as the frontline of healthcare delivery for managing acute and life-threatening conditions, playing a pivotal role in patient outcomes and overall healthcare quality. As the primary unit responsible for triaging, assessing, and treating patients in critical situations, the ED's efficiency and effectiveness are paramount in ensuring optimal patient care and survival [1].

In Indonesia, a country within the ASEAN region, the ED significance cannot be overstated, given the substantial influx of

patients seeking urgent medical attention. With a growing population and increasing healthcare demands, the pressure on EDs to deliver timely, safe, and high-quality care has intensified [2]. Consequently, understanding the factors that influence the quality of nursing services within the ED setting has become imperative for healthcare providers, policymakers, and stakeholders alike.

Quality of care in the ED encompasses various dimensions, including but not limited to, emergency response times, patient safety incidents, procedural success rates, and the efficacy of life-saving interventions [3]. These metrics not only reflect the proficiency of healthcare delivery, but also directly impact patient outcomes, satisfaction, and overall healthcare system performance [4].

Amidst the multifaceted nature of emergency care, nurses play a central role in orchestrating the delivery of services, often serving as the primary point of contact for patients and families. Their ability to provide timely, competent, and compassionate care is instrumental in mitigating adverse outcomes and fostering positive patient experiences [5].

Furthermore, the concept of service factors, particularly the assurance provided by nurses, emerges as a critical determinant of healthcare quality in the ED. Service assurance encompasses the confidence and reliability exhibited by healthcare providers in delivering care, thereby instilling trust and satisfaction among patients [6]. However, discrepancies in service assurance may lead to patient dissatisfaction, compromised safety, and suboptimal care experiences [7].

Given the dynamic interplay between service factors and quality of care, investigating the correlation between these variables among ED nurses is paramount. By elucidating the relationship between service assurance and key quality indicators, such as response times, safety incidents, procedural outcomes, and life-saving interventions, healthcare stakeholders can identify areas for improvement, implement targeted interventions, and enhance overall emergency care delivery.

Thus, this study aims to explore the correlation between service factors, specifically the assurance of emergency department services by nurses, and various dimensions of service quality within the ED setting. By shedding light on this relationship, the findings of this work endeavor seek to inform evidence-based strategies aimed at optimizing emergency care outcomes and fostering patient-centered healthcare delivery.

Experimental

Study design

A cross-sectional study approach was used to determine the correlation between the independent variables the service factor (guarantee emergency department services) with the quality of service (emergency response time of less than 5 minutes, patient safety incidents, insertion of an IV cath line > 1 time, and life-saving).

Time and place

The study was conducted from May to June 2023 in the Emergency Department of a government hospital in Semarang, Indonesia; R.S.U.P. Dr. Kariadi, R.S.U.D. K.R.M.T. Wongsonegoro, and R.S.U.D. Tugurejo.

Data collection

The population covered by this study was nursed in the Emergency Department at government hospitals in Semarang as many as 145 of nurses.

Data analysis

The statistical analysis included descriptive statistic, bivariate analysis using the Chi-square test for comparison between group. The data taken included data: age, sex, length of work, education, nurses service guarantee, emergency response time of less than 5 minutes, patient safety incidents, insertion of an IV cath line > 1 time, life-saving. Data obtained were analyzed using the IBM SPSS Version 24 program.

Selecting three hospitals

The selection of the three hospitals, R.S.U.P. Dr Kariadi, R.S.U.D. K.R.M.T. Wongsonegoro, and R.S.U.D. Tugurejo, was based on several factors. Initially, these hospitals are government hospitals located in Semarang, Indonesia, which serves a significant population and receives a high volume of emergency department visits. Therefore, studying these hospitals allows for a broad representation of emergency department settings within the region.

Secondly, these hospitals were chosen due to their accessibility and willingness to participate in the study. Collaboration with these hospitals ensured access to necessary resources and data, facilitating the smooth conduct of the research.

In addition, these hospitals were selected to provide a diverse sample in terms of patient demographics, case complexity, and resource availability. By including multiple hospitals, we aimed to capture a more comprehensive picture of the correlation between service factors and the quality of services among emergency department nurses, thus enhancing the generalizability of our findings.

Overall, the selection of these hospitals was strategic, aiming to maximize the representativeness and relevance of the study findings to the broader emergency care context in Semarang, Indonesia.

Ethical consideration

This study was approved by Health Research Ethics Committee RSUP DR. Kariadi Semarang, Indonesia (No: 145/EC/KEPK-RSDK/2023).

Results

A descriptive analysis was conducted to obtain an overview of the characteristics of the respondents, and each variable was then distributed in the frequency and percentage tables (Tables 1 and 2).

The research results showed that the average age of nurses was 34.27. The youngest is 21 years old, and the oldest is 53 years old, with the majority of nurses being female, 53.1%. Based on the educational level, it is known that most of them are studying D3 Nursing (associate degree); 61.4%. The average length of work for nurses is 7.72. With the majority of nurses having a work experience of 1-5 years, by 44.1%. Most have one training certificate, which is BTCLS, by 15.9%.

TABLE 1 Descriptive analysis data of emergency response time of less than 5 minutes, patient safety incidents, insertion of an IV cath line > 1 time, life-saving, and service factor (guarantee emergency department services)

Variable	Total	Emergency Installation Service Guarantee	
		Guaranteed	Not Guaranteed
Response time [n (%)]	n = 145	n = 114 (78.6)	n = 31 (21.4)
Fast	109 (75.2)		
Slow	133 (91.7)		24 (16.6)
	12 (8.3)	5 (3.4)	
			7 (4.8)
Patient safety incident [n (%)]			
Achieved			
Not achieved			
	138 (95.2)	112 (77.2)	26 (17.9)
	7 (4.8)		
		2 (1.4)	5 (3.4)
IV cath line insertion>1 time [n (%)]			

Variable	Total	Emergency Installation Service Guarantee	
		Guaranteed	Not Guaranteed
Achieved	130 (89.7)	112 (77.2)	18 (12.4)
Not achieved	15 (10.3)	2 (1.4)	13 (9)
Life saving [n (%)]			
Achieved	87 (60)	78 (53.8)	9 (6,2)
Not achieved	58 (40)	36 (24.8)	22 (15.2)

TABLE 2 The correlation between the service factor (guarantee emergency department services) and the quality of service (emergency response time of less than 5 minutes, patient safety incidents, insertion of an IV cath line > 1 time, and life-saving)

Variable	*P*-value	*A*
Response time	0.004	0.05
Patient safety incidents	0.005	
Insertion of IV cath line > 1 time	0.000	
Life-saving	0.000	

There was correlation between the service factor (guarantee emergency department services) and the quality of service (emergency response time, patient safety incidents, insertion of an IV cath line > 1 time, and life-saving) (Chi-square test, $p<0.05$).

Discussion

The results showed that most of the Emergency Department services nurses provided were guaranteed at 78.6%. However, the researchers' findings show that 21.4% of service guarantees still need to be guaranteed. Some of the factors that may play an influencing role are the limited number of nurses to meet the needs of patients in the Emergency Department due to the large number of patients arriving and various conditions, which can cause nurses to be constrained in providing adequate attention and care to each patient, besides that many nurses have Just attended one training. The results showed that most of the response times performed by emergency department nurses were faster at 91.7%. However, the researchers' findings show that there is still a 8.3% response time in the less good category. Several factors affect the response time of nurses in the Emergency Department are the lack of training for nurses in the Emergency Department. Practical training is ongoing training and development, which means that nurses participate in training more than once to better impact response time in emergency department [8]. Another factor is the large number of patients and limited number of nurses with patients in emergency department, so that the response time will take longer [9].

The results showed that most patient safety in the Emergency Department was achieved at 95.2%. It reveals that patient safety in the emergency installation is achieved. However, 4.8% of patient safety still needs to be achieved. A patient safety incident is an event or situation that results in or has the potential to result in injury due to taking action or not taking the action that should be

taken [10]. Factors that cause safety incidents are a lack of effective communication between health teams, drug errors, inappropriate procedures, and fatigue or work overload [11].

The results showed that the partial insertion of the IV cath line in the Emergency Department achieved 89.7%. Infusion installation was acheived because of the number of trained, experienced, and competent nurses. Even so, 10.3% of nurses still did not achieve the IV line cath insertion. Researchers found that several nurses failed to install infusions because of their low working period. It is in line with Mizam's research (2023), which shows that long work experience is more likely to have good experience and skills at work [12]. Inserting an infusion requires special skills, especially identifying the right vein [13]. The researchers found that several nurses failed to infuse more than once in the Emergency Department due to the patient's conditions that affected them, such as patients with limited venous access and dehydration. Inserting an infusion will be more complicated if the patient is severely dehydrated or has fragile blood vessels due to certain diseases [14].

Research results show that some of the accuracy of action (life-saving) in the Emergency Department is achieved by 60%. It shows that the accuracy of step (life-saving) in emergency department is performed. The achievement of appropriate action is determined from the beginning of triage; the nurse assesses symptoms, medical history, and careful examination of vital signs. Emergency departement nurses with skills and knowledge can take appropriate and effective actions in administering emergency medicines, providing oxygen, maintaining essential functions, stopping bleeding, and carrying out other procedures to maintain patient stability [15]. However, the researchers' findings show that 40% of the accuracy of the action still needs to be achieved. Failure to attain accurate measures (life-saving) due to a limited number of trained emergency department nurses. Some of the conditions that made the accuracy of action (life-saving) not achieved in this study were symptoms that were not typical or similar to symptoms of other medical diagnoses. An inaccurate or late diagnosis can affect the accuracy of action in the Emergency Department [16]. Another factor in this study was that in patients with emergencies, the nurse immediately carried out resuscitation; the nurse did not do 3S (safe self, safe patient, safe environment). Nurses carrying out "3S" consistently and effectively can influence achieving optimal results in carrying out appropriate actions to save patients, especially emergency patients [15].

Bivariate test on emergency response time of less than 5 minutes, patient safety incidents, insertion of an IV cath line > 1 time, life-saving, using Chi square test obtained p-value <0.050, meaning that there is a correlation between the guarantee of emergency department services and the quality of service (emergency response time of less than 5 minutes, patient safety incidents, insertion of an IV cath line > 1 time, and life-saving). The results of this work support research conducted by Garcia (2020) which found that the guarantee of services in the emergency departement performed by nurses is significantly related to response time in Emergency Department [17]. Response time is the speed in handling patients, calculated from when the patient arrives until treatment is carried out; a good response time is ≤ 5 minutes. The slow response time of nurses in saving emergency patients will impact worsening the patient's condition [18]. Thongpitak's (2022) research shows that response time can be increased by implementing effective service assurance practices, including information technology, adequate medical equipment, and adequate nurse training [19]. The results of this research also reveal the same thing, with the

guarantee that services provided by nurses can provide a good response time because nurses in the Emergency Department have at least one training.

It is in line with research conducted by Dahesi (2023), which found that the attitude of nurses towards patient safety is closely related to the level of education, experience, and the number of participants in the training [11]. This study shows that strict procedures, clear security policies, good communication between health workers in the Emergency Department, proper nurse training, and the right technology can reduce the risk of patient safety incidents. High service guarantees and a focus on patient safety can help improve emergency departement monitoring, prevention, and risk management [10]. Good healthcare team coordination and effective communication are essential to reducing patient safety incidents. Guaranteeing effective emergency departement services that encourage good collaboration and communication with the health team can reduce communication errors and improve patient care coordination which can impact reducing patient safety incidents [20].

These research findings indicate a correlation between the guarantee of emergency department services and the insertion of IV cath line > 1 time in the Emergency Department. The high guarantee of services nurses provide will affect the success of IV cath line insertion. In this work, nurses with good knowledge and trained skills tend to be more successful in performing infusions. The results of this research support study conducted by Julia (2022) that adequate training and education for nurses can help reduce the failure rate of infusions [13]. A study conducted by Anderson (2019) also found that guaranteeing good emergency installation services can reduce failure to install IV line catheter infusions [14]. An effective service guarantee system in emergency departments, including adequate nurse training, proper insertion techniques, and the use of the right equipment, can reduce the risk of infusion failure. Guaranteed high emergency department services and focused on patient safety can improve the skills and knowledge of nurses in infusion. Factors such as experience and skill, patient condition, good venous access, and a careful installation process also play an essential role in the infusion success [12].

These findings indicate a correlation between the guarantee of emergency department services and the accuracy of action (life-saving). The results of this work support study conducted by Benjamin (2022), which found that guaranteeing good emergency installation services can contribute to increasing the accuracy of life-saving actions in the Emergency Department [12]. The guarantee of good emergency department services includes applying an appropriate triage system. A sound triage system can help identify patients with emergency conditions who need immediate life-saving measures [21]. The guarantee of good emergency departement services also involves the availability of proper equipment and resources so that the action process can be carried out quickly and efficiently, increasing the chance of saving the patient's life [11]. Furthermore, training supports nurses in guaranteeing good service in the emergency departement; with nurses having the training to handle emergency patients, nurses can take appropriate and effective actions in administering emergency medicines, providing oxygen, maintaining vital functions, stopping bleeding, and carrying out procedures [11].

Conclusion

There is a correlation between the service factor (guaranteed emergency department services) and the quality of service in the Emergency Department (Emergency response

time of less than 5 minutes, patient safety incidents, insertion of an IV cath line > 1 time, life-saving). Suggestions for Nurses should add to the newest emerging knowledge by training at and outside the hospital to maximize the treatment provided. Future research can expand the scope of variables, for example, adding other variables relevant to service guarantees in the emergency room, such as patient satisfaction and use of resources.

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Authors' Contributions

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Conflict of Interest

The author declare that there is no conflict of interest in this study.

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