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Emergency Response Time and Its Determinants in the Quick Response Team in Surabaya, Indonesia

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ABSTRACT

Introduction: The response time in handling prehospital emergencies has not been fully optimal so that people still complain about it. Appropriate response time will reduce mortality and morbidity rates so that patient satisfaction can be met. The aim of this study was to describe the emergency response time and its determinants in the Quick Response Team (it is called "Tim Gerak Cepat") Surabaya.

Methods: This research was a descriptive research design with a cross sectional approach. The population of the study were all nurses in Tim Gerak Cepat (TGC) at the Integrated Command Post Surabaya totaling 126 nurses and a sample of 96 respondents were taken by purposive sampling. The variables were abilities, skills, education, emergency training, length of service, and motivation of nurses as well as the response time in handling emergencies. Collecting data using a questionnaire and presented in descriptive analytics.

Results: The research results showed that the majority of respondents had high abilities (90.6%) and skills (93.8%). The majority of respondents had achieved a third diploma (D3) in nursing (82.3%) and had undergone basic emergency training (88.5%). Furthermore, more than half of the respondents had worked for more than 3 years (68.7%) and showed moderate motivation (51%). In general, the majority of respondents had a response time of ≤ 8 minutes (79.2%).

Conclusion: Nurses at TGC Surabaya actually have a good response time. This is supported by high capacity and skills in emergency situations, as well as educational background, including emergency training. But nurses still need to increase self-motivation. Further research can explore further what are the priority determining factors for emergency response time, especially in Surabaya as the 2nd largest city in Indonesia, in order to assist the government in making the best setting and organization at TGC Surabaya.

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1. INTRODUCTION

An emergency situation is a clinical condition of a patient that requires immediate medical action to save lives and prevent disability (KEMENKES RI, 2016). One indicator of the success of emergency management is the speed of providing adequate assistance to emergency patients, both in routine daily situations or during disasters. The successful handling of these cases is influenced by several factors, one of which is the response time (Limantara

et al., 2015; Dwi Wahyuni, 2018; Suroso & Paraswati, 2023). According to research of Gustia & Manurung (2018), the success of response time is highly dependent on the speed available and the quality of providing assistance to save lives or prevent disabilities from the scene of the incident, on the way to hospital assistance. The response time in handling prehospital emergencies is still not fully in accordance with EMS (Emergency Medical System) standards so that many people complain about it.

The World Health Organization (WHO) sets the response time standard for ambulance accessibility to the location where an emergency situation occurs is equivalent to less than 8 minutes from the time the ambulance is contacted by those who need help until it arrives at the scene (Cabral et al., 2018). Based on research by Bahrami et al. (2011) of 11961 requests for pre-hospital services in Iran, 81.15% met EMS (Emergency Medical System) standards, which ambulance arrived within 8 minutes. Based on research by Black & Davies (2005), 75% of emergency calls in England prehospital response time was within 8 minutes. The response time of the Emergency Medical Service in the United States averaged within 7 minutes from the time of call to arrival at the scene of an urban area and increased by more than 14 minutes at the scene of a rural area.

Medical emergencies cases in the city of Surabaya, Indonesia, continue to increase. This can be seen, one of them, from requests through Command Center 112 Surabaya. Command Center 112 is an integrated control center that receives information, reports, and/or complaints related to disasters, emergency, security, peace, order and social issues as well as coordinating and controlling the handling of such information, reports and/or complaints. The majority of emergency events are trauma events due to traffic accidents and helping patients with emergency medical conditions. Based on initial data from the Surabaya Health Office, it shows that the number of cases requesting the quick response team or Tim Gerak Cepat (TGC) service in Surabaya that entered through command center 112 in 2022 was 8448 cases and 1655 cases of which were emergency cases with an average response time of 7- 10 minutes. The number of requests received in December 2022 was 874 cases with details of 363 accident cases, 165 non-emergency cases, 143 death examination cases, and 203 emergency cases. Of the 203 emergency cases, 177 cases had a response time of 7-10 minutes and 26 cases had a response time of more than 10 minutes. The long response time for handling emergencies has led to complaints from the public.

Response time is the golden period for the patient's life where in many cases it illustrates that the faster the definitive help received by the patient, the greater the possibility for the patient to recover and continue his life, otherwise the failure of response time can be seen from the high mortality rate or permanent disability experienced by the patient. In this context, the response time of health workers in providing services has a close relationship with patient satisfaction Doondori et al., (2019). Response time in emergency care services that are fast and precise can increase patient satisfaction. The faster the patient's handling will increase the patient's satisfaction and vice versa the slower the response time given by the nurse to the patient will reduce the patient's satisfaction with the nurse's performance (Kumaladewi et al., 2021). Based on research Karokaro et al. (2020), on an

analysis of the factors that influence the length of prehospital response time, namely internal and external factors. Internal factors are found in a nurse or other officer such as performing nursing actions consisting of age, education, length of work, and skills of medical personnel while external factors are where a nurse is more concerned with emergency patients so that patients who are not in an emergency not prioritized or lacking health personnel, consisting of supervision and workload.

Prehospital emergency management consists of care given to patients before entering the hospital. In carrying out prehospital treatment the focus is on the initial evaluation and supporting the patient as much as possible (Bashiri et al., 2019). Handling prehospital emergencies requires speed and accuracy to minimize patient risk, so that the duration of response time is an important indicator in prehospital services (Prasetya et al., 2015). The effectiveness of response time depends on 3 components, namely call processing time, time spent by the team in the ambulance to prepare, and travel time to the scene of the incident (Oktaviani, 2013). Therefore, the efforts made to increase response time are to improve the performance of nurses through education and training on handling emergency patients so that it has an impact on improving the quality of service.

Based on the background above, it can be concluded that response time to emergency treatment is a fundamental factor for successful prehospital treatment and increases the chances of survival. Therefore the researcher is interested in conducting a research that describe the response time and its determinants in the Tim Gerak Cepat (TGC) Surabaya, Indonesia.

2. METHODS

Study Design

This study was a descriptive research with a cross-sectional approach, which is a type of research that emphasizes the time of measurement or observation of all data only once at a time. Researchers measured the data of ability, skills, education, emergency training, length of work, motivation, and emergency response time simultaneously.

Population, Samples, and Sampling

The population in this study were all nurses at TGC Integrated Command Post Surabaya, totaling 126 nurses and a sample of 96 respondents obtained through a non-probability sampling method called purposive sampling

Instruments

Data collection in this study used a questionnaire to measured all data, including ability, skill, education, history of emergency training, length of work, motivation and emergency response time.

Procedure

Questionnaires were distributed to respondents. A brief explanation was given to respondents about the aims and objectives of this study on the initial page of the questionnaire. Filling in the informed consent form by the respondent as proof of giving consent to be part of this study and the respondent's consent to use his personal data for the purposes of this research. Respondents were asked to fill in all the questions according to the instructions given in the questionnaire question format. When the form is complete, it is collected directly to the researcher.

Data Analysis

Data collection in this research used a questionnaire instrument which was filled in directly by the respondent. After data is collected from respondents, data processing is carried out by editing, coding, assessing, processing and tabulating. Next, the data was analyzed descriptively by presenting percentages.

Ethical Clearance

This research has passed an ethical review from the Research Ethics Committee of the Chakra Brahmanda Lentera Institute with number 086/003/VII/EC/KEP/LCBL/2023 on 03 July 2023.

3. RESULTS

Based on table 1, it shows that out of 96 respondents, almost half of the respondents (30.2%) were aged 31-35 years, most of them (53.1%) were male and work as government employee (57.3%).

Based on table 2, it shows that out of 96 respondents, almost all nurses (90.6%) have high ability in handling emergencies, almost all nurses (93.8%) have competent skills in handling emergencies, almost all nurses (82.3%) have an educational background of three years diploma nursing (D3), almost all nurses attended basic emergency training with a total of 85 people

Table 1. Demographic data (characteristics of respondents based on age, gender, and employment status)

Characteristics	n	%
Age		
21-25 years	8	8.3
26-30 years	19	19.8
31-35 years	29	30.2
36-40 years	26	27.1
41-45 years	12	12.5
46-50 years	2	2.1
Gender		
Male	51	53.1
Female	45	46.9
Employment Status		
Government employee	55	57.3
Honorary employee	12	12.5
Non-government employee	29	30.2

(88.5%), most of the nurses had a length of work

Table 2. Cross tabulation of variable response time with variable abilities, skills, education, emergency training, length of service, and motivation

Variable(s)	Response Time		Total n (%)
	≤ 8 minutes f (%)	> 8 minutes f (%)	
Abilities			
High	70 (80.5%)	17 (19.5%)	87 (100%)
Medium	6 (75%)	2 (25%)	8 (100%)
Low	0	1 (100%)	1 (100%)
Subtotal	76	20	96
Skills			
Competent	73 (81%)	17 (19%)	90 (100%)
Less Competent	3 (60%)	2 (40%)	5 (100%)
Incompetent	0	1 (100%)	1 (100%)
Subtotal	76	20	96
Education			
Diploma Nursing (D3)	62 (78.5%)	17 (21.5%)	79 (100%)
Bachelor Nurse	14 (82.35%)	3 (17.65%)	17 (100%)
Subtotal	76	20	96
Emergency Training			
Basic Emergency Training	68 (80%)	17 (20%)	85 (100%)
Advanced Emergency Training	8 (72.73%)	3 (27.27%)	11 (100%)
Subtotal	76	20	96
Length of work			
< 1 year	3 (75%)	1 (25%)	4 (100%)
1-3 years	19 (73.08%)	7 (26.92%)	26 (100%)
> 3 years	54 (81.82%)	12 (18.18%)	66 (100%)
Subtotal	76	20	96
Motivation			
High	35 (85.37%)	6 (14.63%)	41 (100%)
Medium	37 (75.51%)	12 (24.49%)	49 (100%)
Low	4 (66.67%)	2 (33.33%)	6 (100%)
Subtotal	76	20	96

more than 3 years totaling 66 people (68.7%), most of the nurses had moderate motivation in emergency treatment of 49 people (51%). In addition, the majority of nurses have a response time of ≤ 8 minutes in handling an emergency with a total of 76 people (79.2%).

Apart from that, it can be seen that almost all nurses who have high ability carry out emergency management with a response time of ≤ 8 minutes (80.5%), as well as nurses who have competent skills (81.1%), nurses who have taken basic emergency training (80%), nurses who have high motivation

(85.4%), nurses who had worked for more than 3 years (81.8%), and nurses who have diploma nursing education (78.5%). However, this distribution also occurs in the response time >8 minute category, where the largest percentage of prolonged response time occurs in respondents (or nurses) with the same criteria as previous

4. DISCUSSION

It show in table 2 that out of 96 respondents, almost all nurses (90.6%) have high ability in handling emergencies, and almost all nurses who have high ability carry out emergency management with a response time of ≤ 8 minutes (80.5%). In addition, almost all nurses (93.8%) have competent skills in handling emergencies and almost all nurses who have competent skills showed a response time of ≤ 8 minutes (80.5%). Theory of Gibson (1997) states that the higher the level of a person's ability, the higher the ability to complete the job. Ability is a trait (congenital or learned) that allows a person to do something mentally or physically, while skills are the factors that most support a person in doing a job (Gibson et al., 1997). A person will be able to complete his work if supported by sufficient knowledge about the job, ability determines the quality of one's work (Darodjat, 2015). In Nikpeyma et al. (2014) revealed several components that can improve the performance of nurses, one of which is the training process which will affect the improvement of nurses' abilities. Chadwick & Gibson (1997), also states that a person's skills are directly proportional to performance, Gibson says skills are the factors that most support a person in doing a job such as competence related to tasks. In line with the theory of Chadwick & Gibson (1997), Darodjat (2015), states that the more competent an employee is, the higher the employee's performance will be. To improve skills, it is necessary to carry out training which is one of the factors needed to improve and develop the attitudes, behavior, skills and knowledge of employees. With the training program, it is hoped that employees can provide optimal contributions and achievements so that organizational goals are achieved.

Nurses at TGC Command Center 112 Surabaya who have high ability can carry out emergency care with a response time of ≤ 8 minutes due to the high ability to be able to provide emergency nursing care, master the assessment primary survey, and secondary survey well so that the response speed in handling emergencies is also increasing. Nurses at TGC Command Center 112 Surabaya who have high abilities can provide emergency services with a response time of ≤ 8 minutes due to their high ability to provide emergency nursing care, master the assessment of primary surveys and secondary surveys well, so that the speed of response in handling emergencies are also increasing. In other point of view, nurses with competent skill could showed standard response time due to they were

able to carry out live saving nursing actions properly, such as determining triage, carrying out resuscitation actions, and stabilizing properly so that the performance of nurses can show their professionalism in a real way in improving the quality of the TGC service.

Other determinants of emergency response time are the educational background of nurses and emergency training that has been attended by them. Almost all nurses (82.3%) have an educational background of three years diploma nursing (D3), and attended basic emergency training (88.5%). In Addition, almost all nurses who have diploma nursing education (78.5%) and have taken basic emergency training (80%) carry out emergency management with a response time of ≤ 8 minutes. Chadwick & Gibson (1997) states that a person's education has a high influence on employee performance, in this case, the nurse's response time. Background and demographics that also influence a person's level of performance are age, gender, marital status, ethnicity, education, work experience, family conditions, and social status. According to Fabi et al. (2015), the education level of an organization's employees also greatly influences the quality of an organization, the higher the employee's education, the higher the quality that will be produced. The higher the education level of a nurse, the higher the nature of critical thinking, mature logic, systematic thinking. For aspect of nurse's training attendance, Chadwick & Gibson (1997) also states that the general purpose of training is to increase organizational effectiveness and efficiency while the specific objectives are to increase productivity, improve quality, improve the quality of workforce planning, as indirect remuneration, improve occupational health and safety, and opportunities self-development. Basically the main goal of the training program is to improve skills in every job properly, because it is supported by the knowledge, skills and ability to adapt to the demands of the job at hand (Darodjat, 2015). According to Bogar, the performance improvement of nurses can be increased through education and training in handling emergency patients (Bogar et al., 2017).

In Indonesia, nursing diploma education, including a 3-year diploma, is a type of vocational education that focuses on hard skills, including in the emergency sector. Nursing diploma graduates are also known as professional nurses who have sufficient professional attitudes to master nursing science and are able to carry out professional nursing care based on nursing care standards and nursing ethics. This is also supported by the skills obtained by nurses from basic and advanced emergency training which can improve the specific abilities of nurses in emergency situations, so that with mastery of skills and good quality education, nurses can display fast response times according to standards.

The result also shows that most of the nurses had a length of work more than 3 years totaling 66

people (68.7%) and most of them had moderate motivation in emergency treatment of 49 people (51%). In addition, it can be seen that almost all nurses who had worked for more than 3 years (81.8%) and have high motivation (85.4%) carry out emergency management with a response time of ≤ 8 minutes. Chadwick & Gibson (1997) states that members who have worked in an organization for a long time will gain more experience so that their performance will be better and according to (Semadar et al., 2006; Munyon et al., 2015) the seniority level of an employee is directly proportional to his work productivity. Tenure is related to length of work, the longer a person works, the more proficient he is at work. This theory is supported by which states that there is an effect of experience on nurse performance. Chadwick & Gibson (1997) also states the factors that influence performance from psychological factors are perception, attitude, personality and motivation and what plays the most role in a person's behavior and performance is motivation. Motivation is a human psychological characteristic that contributes to a person's level of commitment (Tella et al., 2007; Geetha & Venkatramaraju, 2013). Motivation has three main elements, namely needs, drives, and goals. Needs occur when there is an imbalance between what is owned and what is expected, while encouragement is a mental strength that is oriented towards achieving goals. The drive to achieve goals is the essence of motivation (Joseph et al., 2015).

In this study, nurses who have worked > 3 years can handle emergencies with a response time of ≤ 8 minutes because the longer the nurse works, the more experience the nurse has in handling emergency cases, so the response is faster and more precise. Work experience can be formed based on the length of work that has been undertaken and with the experience possessed, the knowledge and competence possessed will increase. Apart from that, most of the nurses at TGC Command Center 112 Surabaya have motivation in the moderate category, not high, because TGC nurses have a large workload. Apart from carrying out their duties as a rapid response team (TGC) at Command Center 112, nurses also still have the responsibility to carry out service duties at the community health centers where they work

CONCLUSION

Nurses at TGC Surabaya actually have a good response time. This is supported by high capacity and skills in emergency situations, as well as educational background, including emergency training. But nurses still need to increase self-motivation. Further research can explore further what are the priority determining factors for emergency response time, especially in Surabaya as the 2nd largest city in Indonesia, in order to assist the government in making the best setting and organization at TGC Surabaya.

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