



Increase Nursing Satisfaction with Electronic Emergency And Disaster System (SPEED)

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ABSTRACT

Medical records are infrequently documented in prehospital services. Considering the benefits of Electronic Medical Record (EMR) have a significant impact on nurse satisfaction, quality of care, and quality of clinical decisions, it is essential to develop technologies that could facilitate prehospital services. The objective of this study was to determine if the Emergency and Disaster Electronic System (SPEED) program increased the job satisfaction of prehospital nurses involved in the documentation of medical data. The study design uses True Experimental Design with a Crossed Over Design approach. The study sample consisted of 54 participants divided into two groups. Group A received the SPEED intervention, whereas Group B received the paper-based intervention (Period 1). After the second period (washout phase), group A received a paper-based intervention whereas group B received the SPEED intervention (3rd period). The Job Satisfaction Survey was utilized for this study. Researchers utilized the Paired sample T test and the Independent sample t-test statistical tests. After receiving a SPEED intervention, the group's mean difference was a rise in job satisfaction, as indicated by the results. This shows that SPEED application interventions are more helpful in enhancing nurses' job satisfaction with medical record documentation.

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ABSTRAK

Pendokumentasian rekam medis dalam layanan prehospital jarang dilakukan. Pada layanan emergensi dibutuhkan Electronic Medical Record (EMR) karena berdampak pada kepuasan perawat, kualitas perawatan dan kualitas keputusan klinis. Oleh karenanya dibutuhkan pengembangan inovasi yang dapat memudahkan dalam layanan prehospital. Tujuan penelitian untuk mengetahui pengaruh aplikasi Sistem Penanganan Elektronik Emergency dan Disaster (SPEED terhadap peningkatan kepuasan kerja perawat prehospital dalam pendokumentasian rekam medis. Desain penelitian menggunakan True Eksperimental Design dengan pendekatan Crossed Over Design. Sampel penelitian berjumlah 54 responden yang dibagi menjadi dua grup kelompok. Kelompok A diberikan intervensi SPEED dan kelompok B diberikan intervensi paper based (Periode ke-1). Setelah periode ke-2 (masa washout) maka terjadi pertukaran posisi yaitu kelompok B diberikan intervensi SPEED dan kelompok A diberi intervensi paper based (periode ke-3). Instrumen yang digunakan yaitu Job Satisfaction Survey. Peneliti menggunakan uji statistik Paired sample T test dan Independent sampel t test. Hasil penelitian menunjukkan bahwa kenaikan kepuasan kerja pada kelompok sesudah diberikan intervensi SPEED. Hal ini menunjukkan bahwa intervensi aplikasi SPEED lebih efektif

meningkatkan kepuasan kerja perawat dalam pendokumentasian rekam medis.

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INTRODUCTION

Prehospital services are provided when an emergency call happens outside of the hospital (Abuzeyad *et al.*, 2020). Emergency Medical Service (EMS) is a comprehensive system that provides health staff, facilities, and equipment that are properly integrated and coordinated in order to provide correct and prompt actions to patients outside of the hospital (Kotsiou *et al.*, 2018). Working in the Emergency Room and providing prehospital care is difficult due to the stress of the setting and the severity of the patients' situations, workload, the pressure to deliver on time, and the risk of workplace violence. This naturally affects the nurse's job satisfaction (Julia-Sanchis *et al.*, 2019).

Excessive workload must be avoided because they could impair performance, cause stress, raise the likelihood of making errors, and reduce nurses' job satisfaction (Astik *et al.*, 2021). Professionalism is essential for nurses to attain job satisfaction. The extent to which a person enjoys his employment is reflected by his job satisfaction (Lee *et al.*, 2021). Job satisfaction is an emotional representation of positive or negative feelings; if employees feel satisfied, job satisfaction has been attained, and vice versa (Siregar *et al.*, 2021). In health service organizations, job satisfaction is a crucial issue, and the nursing profession is one of them (Ataollahi *et al.*, 2015; Gholami *et al.*, 2020). Therefore, nurse job satisfaction is the attitude and feelings expressed by nurses, both positively and negatively, regarding the task they perform (Wolo *et al.*, 2015).

Job satisfaction of nurses is a metric for evaluating health service work systems that might enhance the quality of nursing care offered to patients (Gholami *et al.*, 2020). One of the components of the dimensions of job satisfaction is contentment with work procedures, which is satisfaction with work procedures owing to easy administration, simple and clear documentation, regulations that meet with standards, and organized, straightforward work procedures. The nursing documentation is the key clinical resource for the patient's condition and plays a crucial role in assessing the delivery of appropriate care. Efforts to improve nursing documentation, such as patient medical records, are a crucial aspect of nursing practice (Akhu-Zaheya *et al.*, 2018).

Documenting medical records in prehospital services is extremely uncommon, resulting in poorly recorded action data (Hagiwara *et al.*, 2019). Utilizing a technology information system, such as the Electronic Medical Record (EMR), is one technique to reduce job discontent in medical record documentation (Arndt *et al.*, 2017). Currently, technical changes and advancements are occurring at a quick rate; technological advancements have led to the creation of inventions that considerably facilitate the nursing process (Patterson *et al.*, 2019). This interdisciplinary teamwork increases efficiency, patient access, and the quality of healthcare services, which can result in considerable modifications to nursing care. The most recent equipment and programs allow nurses, medical teams, and other medical personnel to track and monitor patient development (Homeyer *et al.*, 2018).

According to the study of Mullins (2020), emergency services require EMR since the benefits of EMR influence nurse satisfaction, quality of treatment, and clinical decision quality (Mullins *et al.*, 2020). The usage of electronic technology systems in emergency services has good and far-reaching effects on health professionals (Yaghmaei *et al.*, 2022). Some of the potential benefits include facilitating comprehensive patient records, enhancing reporting, minimizing data entry errors, and facilitating the delivery of health services more effectively. This might affect nurses' ability to make prompt, real-time medical judgments (Bentvelsen *et al.*, 2021)

The Duren Sawit Regional Special Hospital (RSKD) is a hospital that has provided prehospital services since 2019 but lacks conventional prehospital medical records and work operational standards for prehospital services. Researchers are interested in revolutionizing the development of electronic emergency management at Duren Sawit Hospital by utilizing the SPEED website system (Emergency and Disaster Electronic Management System). This application is packed with a variety of capabilities, such as the ability to view prehospital time in real time, electronic medical records, and emergency education, that might be accessible by requesting services. Therefore, the objective of this study was to determine if the Emergency and Disaster Electronic System (SPEED) program increased the job satisfaction of prehospital nurses involved in the documentation of medical data.

METHODS

Respondent Characteristics and Study Design

In this study, 54 participants were used by researchers (Dahlan, 2018). The eligibility criteria are:

- Minimum professional experience > 1 year
- Have a certification of training BTLS
- Minimum last education Diploma Nursing
- Comprehending computer and mobile device technology
- Willing to be a respondent from the beginning to the end of the study

This study is a True Experimental Design study employing the Crossed Over approach, which is an experimental method for comparing two or more treatments, in which the same group receives two distinct treatments in consecutive time periods, with each treatment lasting between 2 and 4 weeks. (Hidayani, 2020). This study was conducted during August and October of 2022 at prehospital services in the Duren Sawit RSKD work region. This study was divided into three stages (each requiring three weeks), the first of which was from 20 August to 10 September 2022 and involved the installation of the intervention. or the first treatment, then continue for the second period from 11 September to 1 October 2022 for the washout, which is a break or no intervention is administered to the respondent. The last period is the third period which

will be held from October 2 to October 22 2022 where there is an exchange of positions between groups and a second intervention or treatment is given. The scheme of the true

experiment research design with cross over design in this study is as follows:

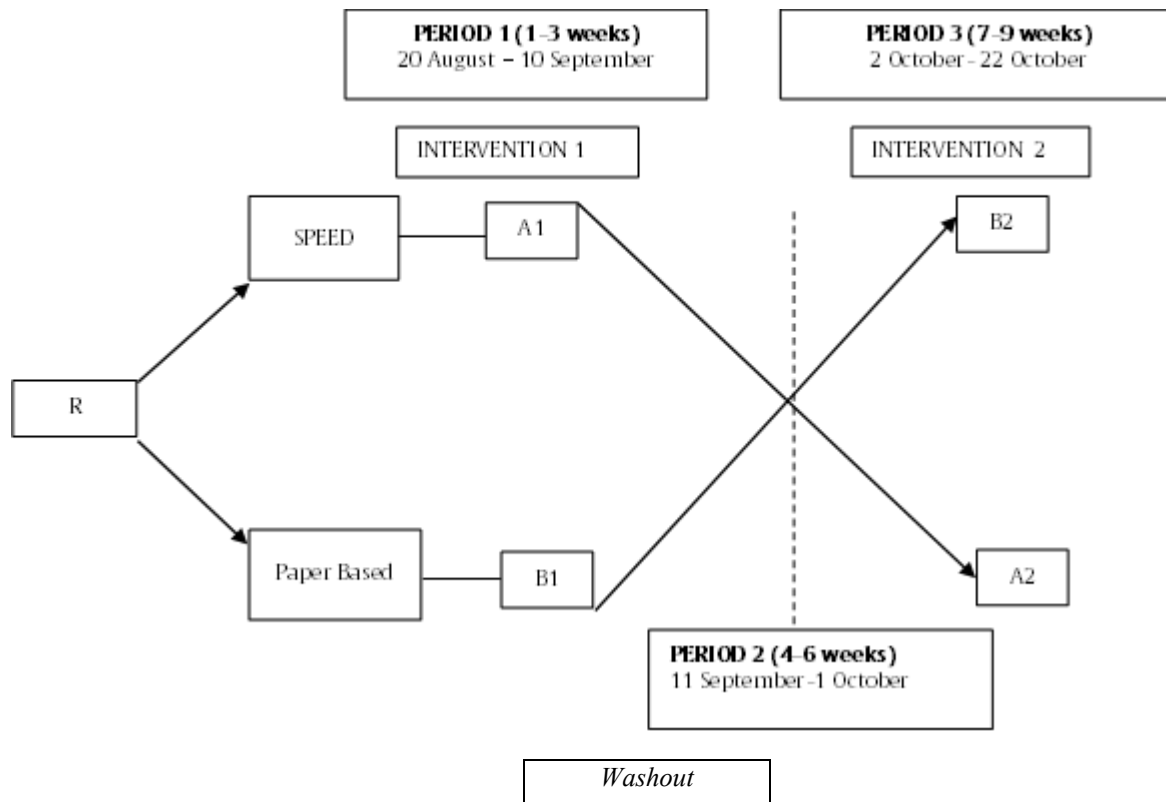


Chart 1 Scheme of the Cross Over design flow

Sampling Procedure

Total population in this study amounted to 60 respondents. The minimal number of samples in the sample calculation is 19, and because 60 participants were eliminated from the sample of 60 respondents, the researchers employed 54 respondents for this study (Dahlan, 2018). Simple random sampling was performed to produce a homogeneous sample, following which two groups were separated into 27 members using the Random Group Generator and consort diagrams.

Data collection

This study employed a questionnaire, specifically the Job Satisfaction Survey questionnaire with a scale of interval measurement (25-100) and 25 statement items. At RSUD Dr. Saiful Anwar Malang, validity and reliability tests for this questionnaire were conducted using Cronbach's Alpha values of 0.85 and 0.97. The feasibility of the SPEED application was evaluated on 15 119 Ambulance staff (nurses, physicians, administrators, and drivers) at Dr. Saiful Anwar Malang.

Data analysis

In this study, the Univariate Analysis was utilized to examine demographic data, and the Bivariate Analysis, specifically the Paired T-Test, was used to determine the impact of medical record production utilizing SPEED on prehospital nurse satisfaction at RSKD Duren Sawit.

Researchers also employed the Independent Sample T test to examine differences in the influence of medical record documentation on the job satisfaction of prehospital nurses at Duren Sawit Hospital between Paper Based and the Emergency and Disaster Electronic Handling System (SPEED) application. No. 3804/UN10.F17.10/TU/2022, dated 11 August 2022, this research was approved by the Health Research Ethics Committee, Faculty of Health Sciences, Universitas Brawijaya.

RESULTS AND DISCUSSION

Based on table 1, it was determined that the majority of respondents were male and aged 20-30, specifically 16 individuals (59.3%) and 16 individuals (59.3%). The majority of respondents had a D3 education, or 25 individuals (92.6%), respondents had worked for more than 2 years, or 17 individuals (63.0%), and all respondents in this study, 27 individuals (100.0%) in each group had had BLS and BTLS training.

Before analyzing the data with the Paired T test, the researcher conducted a normality test using the Shapiro-Wilk test and homogeneity test, and the results indicated that the data were normally distributed and homogeneous. In order to do the Paired T Test and Independent T Test. Table 2 reveals that there was a change in the mean, namely a rise in work satisfaction in groups A1 and B2 after receiving the SPEED intervention, with a difference between A1 (7.51) and

B2 (5.11) and a significance level of 0.00 (two-tailed). This indicates that integrating electronic medical records with the SPEED program can enhance the job satisfaction of prehospital nurses at Duren Sawit Hospital. On the basis of the results of the Job Satisfaction Survey (JSS) post-test

questionnaire administered to 54 respondents, it was determined that the majority of respondents experienced an increase in job satisfaction on the dimensions of work procedure satisfaction (mean = 11.92) and overall job satisfaction (mean = 11.94). (4.40).

Table 1. Distribution of frequency characteristics of respondents based on gender, age, last education, length of work and training experience

Characteristics	Group A (n=27)		Group B (n=27)	
	f	%	f	%
Gender				
Man	15	55,6	16	59,3
Woman	12	44,4	11	40,7
Age				
20-30 years	12	44,4	16	59,3
31-40 years	8	29,6	8	29,3
41-50 years	7	25,9	3	11,1
Last education				
Diploma	24	88,9	25	92,6
Bachelor	3	11,1	2	7,4
Length of work				
1 - 2 years	10	37,0	12	44,4
>2 years	17	63,0	15	55,6
Training experience				
BLS & BTLS	27	100,0	27	100,0

Source. Primary data, 2022

Annotation:

Group A was delivered the SPEED intervention whereas Group B was delivered the paper-based intervention (1st period). After the second phase (washout period), roles were switched, with group B receiving the SPEED intervention and group A receiving the paper-based intervention (3rd period).

Table 2 Effect of medical record documentation using the SPEED application on prehospital nurse job satisfaction

Intervention	Variable	Group	N	Pre Test	Post Test	P. Value
				Mean ± SD	Mean±SD	
SPEED	Job satisfaction	A1	27	63,15±1,93	70,67±3,40	0,00
		B2	27	78,70±4,78	83,81±5,55	0,00

Source. Primary data, 2022

There is a correlation between electronic medical records and the contentment of nurses with their job routines. Use of electronic medical records to aid nurses in patient care and clinical documentation, such as through enhanced documentation quality, increased administrative efficiency, and improved quality, security, and coordination of maintenance (Ancker *et al.*, 2015). In Saudi Arabia, electronic medical records also include new capabilities for drafting and transmitting electronic prescriptions to improve operations for medical professionals such as doctors and nurses (Alumran *et al.*, 2020). Increasing work abilities while using electronic medical records, such as improving access to patient information, will have an effect on nurse job satisfaction (Baumann *et al.*, 2018). According to the findings of other studies, the perceptions and expectations of health service providers regarding the quality of efficiency, availability, satisfaction, and privacy are greater in hospitals that utilize electronic medical records than in hospitals that utilize paper-based medical records (Ayaad *et al.*, 2019).

Gender is one of the characteristics that determine job satisfaction. Gender is one of the elements impacting technology adoption and use; it also influences how mobile technology is integrated into providers' practices; and

women have greater levels of technology acceptance (Khairat *et al.*, 2020). Female nurses report greater job satisfaction with electronic medical records (EMR) than their male counterparts. In electronic medical records, female nurses are more consistent in getting information and completing documentation responsibilities (Mousazadeh *et al.*, 2018).

The majority of respondents in this study were young adults between the ages of 20 and 30 (59.3%). The age that is included in the productive age to create good performance, nurses who have the potential to provide more professional care to patients and have a high potential for good performance (Hairil Akbar *et al.*, 2022). Age of nurses correlates positively with performance in the health industry. The competency of nurses grows with age. Higher age increases workplace satisfaction and productivity (Abdullah *et al.*, 2021). Studies conducted by Mousazadeh (2018) indicates that younger workers are more satisfied with their jobs (Mousazadeh *et al.*, 2018).

EMR is a clinical information resource that provides thorough documentation of treatment and supports patient care and healthcare delivery. EMRs can provide clinical decision support for nurses to access evidence-based

practice, practice guidelines, policies, and workplace practices in order to enhance care delivery and minimize the workload of nurses who have difficulty implementing paper-based documentation (Jedwab *et al.*, 2019).

All respondents in this study had also received BLS and BTLS training, indicating that empowering nurses through training, seminars, and workshops could enhance their knowledge, competence, and skills. According to Laschinger's thesis, structural empowerment comprises information, support, and resources. The empowerment of nurses can improve both nurse and patient satisfaction. Empowerment enables nurses to acquire the knowledge necessary to negotiate an acceptable workload, maintain control over their own job, and cultivate positive working relationships. (Yao *et al.*, 2021).

Higher education in nursing has a crucial role in strengthening graduates' attitudes, perspectives, and professional skills (Calder-Sprackman *et al.*, 2021). Other research in the studies conducted Abed *et al.*(2022) indicated that nurse acceptance and positive views regarding EMR use were substantially correlated with educational attainment. Tenure denotes the length of time a person has been

employed, which is estimated from the moment they began working for an organization and occupied a particular position (Abed *et al.*, 2022). Nurses with a working history of one to five years are typically young and do not experience boredom at work, allowing them to develop professionally and provide patients with superior care (Hairil Akbar *et al.*, 2022).

Training might help nurses adjust to difficult situations that increase their work load, allowing them to achieve job satisfaction (Konttila *et al.*, 2019). A healthy organizational environment could assist the development of employees, whereas a poor organizational environment will have a negative influence on employees and may generate stress. Even for those who work long hours, stress can be avoided. When all job processes are supported by the organizational environment, employees experience sentiments of satisfaction and comfort (Konttila *et al.*, 2019). According to Palazoglu, stress is a person's response to threatening and upsetting environmental changes that make him feel physically and mentally threatened. Everyone has a particular level of pressure tolerance at any given time, that is, the capacity to overcome it or not (Palazoglu & Koc, 2019).

Table 3.
Differences in Job Satisfaction in documenting medical records in prehospital nurses after being given SPEED and Paper Based interventions

	N	Levene Test	Mean±SD	Mean Difference	Pvalue
Job Satisfaction Intervention 1					
SPEED	27	0,054	70,67±3,40	10,55	0,000
Paper Based	27		60,11±5,14		
Job Satisfaction Intervention 2					
SPEED	27	0,128	83,81±5,55	13,70	0,000
Paper Based	27		70,11±5,98		

Source. Primary data, 2022

The results of the two job satisfaction treatments using SPEED and Paper Based showed significant differences with a sig (2-tailed) value of 0.00 and a Mean Difference of 10.55 (first treatment) and 13.70 (second treatment). mean SPEED (70.67) and paper based (70.67 ± 3.40) and (60.11 ± 5.14) in the first treatment and (83.81 ± 5.55) and (70.11 ± 5 ,98) in the second treatment which means that the SPEED intervention is more effective in increasing job satisfaction in documenting medical records for prehospital nurses at Duren Sawit Hospital.

Nursing documentation is the primary clinical resource for patient situations and plays a crucial role in evaluating the provision of appropriate care (Hummel *et al.*, 2020). Efforts to improve nursing documentation, such as patient medical records, are an essential component of nursing practice (Akhu-Zaheya *et al.*, 2018). High-quality nursing documentation, such as the use of an electronic medical record (EMR), facilitates effective communication and collaboration among members of the healthcare team, hence enhancing nurse satisfaction with colleagues (Ayaad *et al.*, 2019).

Electronic medical records have a considerable effect on the performance and clinical services of nursing staff, making them the most influential group in the implementation of electronic medical record systems (Jedwab *et al.*, 2019). Nurses reported that the information provided by the electronic medical record system made their jobs easier because they had access to information when and where they needed it, they could find all the information they needed on an ongoing basis, and they agreed on the accuracy of the data that was documented (Alumran *et al.*, 2020).

EMR influences the enhancement of data automation-driven nursing workflow and productivity, as well as nurse satisfaction with new technologies (Bauer *et al.*, 2020). A written survey found that the implementation of automated technology contributed to the improvement in nurse job satisfaction. The use of automotive technology like as EMR will reduce the amount of time nurses spend on documentation (Karbakhsh Ravari *et al.*, 2020). Job satisfaction for nurses results from increased nurse time to treat patients so that the quality of care increases (Müller *et al.*, 2020).

According to research conducted Hariyati (2020) electronic patient medical records assist nurses in validating nursing practice and facilitating team communication. This study confirms prior findings that electronic recording increases the completeness and quality of nursing documentation as well as the quality of prehospital nursing care. These researchers demonstrated that employing electronic nursing documentation improves satisfaction, convenience, thoroughness, and relevance (Hariyati *et al.*, 2020). Electronic medical records have potential for enhancing patient safety, quality of care, nurse productivity and performance, patient engagement, cost of treatment, and health outcomes (Kaipio *et al.*, 2020).

EMR could provide clinical decision support for nurses to access and utilize the best available evidence, practice guidelines, and workplace policies and procedures to enhance care delivery and reduce nurse workload (Akhu-Zaheya *et al.*, 2018). However, regular oversight is required to guarantee the accuracy of the nursing staff's computerized record (House *et al.*, 2022). Relationship between electronic

medical records and nurse satisfaction with job procedures. Use of electronic medical records to aid nurses in patient care and clinical documentation; for instance, by enhancing the quality of documentation, boosting administrative efficiency, and providing greater quality, security, and coordination of care (Nguyen *et al.*, 2019).

Increasing work abilities while using electronic medical records, such as improving access to patient information, will have an effect on nurses' job satisfaction (Baumann *et al.*, 2018). EMR could improve nurse communication with patients and other healthcare professionals. Providing EMR interventions has the ability to enhance a more efficient data gathering system, hence facilitating an effective flow of information between various patient-treatment disciplines.

EMR is a technology that could accelerate the process of patient data collecting, allowing nurses to spend more time communicating directly with patients and providing optimal care. A more efficient documentation system is anticipated to promote patient communication (Yao *et al.*, 2021). In addition to enhancing communication between nurses and patients, EMR can also enhance clinical communication between nurses and other healthcare professionals. This method includes communication and cooperation between physicians, pharmacists, and nurses as an example of interdisciplinary application in prescription patient medication. EMR eliminates information transmission mistakes such as illegible handwriting (Atasoy *et al.*, 2019).

This technology could also improve the clarity of complex orders, streamline physician access to health information, and enhance patient satisfaction by making instructions more clear (Tsai *et al.*, 2020). Nurses need a nursing documentation system in the patient's medical record that facilitates the presentation of clinically relevant patient information (Kaihlainen *et al.*, 2020). The usage of paper-based medical records could result in clinical meanings that vary depending on the nurse because each nurse has a unique understanding. Information that the nurse records in narrative style or that is delivered redundantly will typically be relayed by colleagues. In addition, the recording habits of nurses on paper forms or scraps of paper might lead to the omission of clinically significant information from the patient's medical record (Wisner *et al.*, 2019)

LIMITATIONS

This study has a few of limitations, among others

1. The majority of prehospital service users or requests for prehospital services in this study were patients assisted by social institutions that collaborate closely with the Duren Sawit RSKD; therefore, it is hoped that this SPEED application can be implemented in broader services, such as the Public Safety Center (PSC) and other partners.
2. This SPEED application utilizes a web browser, so a connection to the Internet is required to use it. It becomes a factor when the SPEED application is implemented in distant and remotest places where internet connectivity is limited or perhaps nonexistent.

CONCLUSION

The study's findings show that electronic medical records in the SPEED program could enhance the job satisfaction of prehospital nurses at Duren Sawit Hospital. The SPEED

application alleviates the time constraints prehospital nurses face when documenting medical records. The integration of an EMR with the SPEED program helps the completion of medical record recording in terms of work process service flow, resulting in prehospital nurses being satisfied with their work outcomes in terms of work procedures. Recommendations for future researchers include the necessity for research with a larger sample size and longer duration, as well as the usage of the SPEED application in various samples of prehospital services, such as the 119 ambulance service, public safety center (PSC), and others.

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ETHICAL CONSIDERATIONS

The research has received approval from the Research Ethics Committee of the Faculty of Health Sciences, University of Brawijaya, No. 3804/UN10.F17.10/TU/2022, and permission from the Malang District Health Office and Malang District Health Center Dau.

Potential Conflict of Interest

The author says that there is no possible conflict of interest between writing this article and getting it published.

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