

Analysis of Nurse Personal Factors of Triage Decision-Making in Emergency Installation at University of Muhammadiyah Malang Hospital

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Abstract

The high frequency of patient visits to the ER will disrupt the service process at the Emergency Department (IGD). One solution is the application of a triage system, which is the process of sorting patients according to their level of gravity. The accuracy of triage decisions has a significant impact on patient outcomes so that in this case nurses in the ER must have knowledge, understanding, and skills about triage. Analyze personal factors that influence emergency nurse decision-making. This study aimed to identify personal factors influencing triage decision-making among emergency nurses. Respondents were 30 male and female nurses who worked and were active up to now in the IGD Hospital of the University of Muhammadiyah Malang. Data on work experience, education, and training were taken from data on the characteristics of respondents. The knowledge questionnaire came from the Emergency nurses association/ENA while the skills questionnaire used the Triage Skill Questionnaire/TSQ. The Spearman correlation test shows that there is a significant relationship between skills and education with triage decision making ($p=0.000$; $r=0.626$ and $p=0.039$; $r=0.378$). Meanwhile, the variables of knowledge, work experience, and training do not correlate with triage decision making ($p>0.05$) except that GELS training shows a significant relationship between GELS training and triage decision making ($p=0.016$; $r=0.437$). The results of linear regression analysis, skills, and education are factors that influence decision-making in conducting triage in the ER (45,4%). Skills and education are the factors that most influence triage decision-making.

Keywords: triage, decision making, emergency nursing.

Introduction

Emergency Room (IGD) is part of the service in a hospital that provides 24 hours of service every day. The prevalence of emergency patient visits to the ER is increasing, both in patients with stable and unstable conditions. The data on patient visits to the emergency room in Indonesia in 2007 were 4,402,205 patients (13.3%) of the total visits to the hospital¹. Data on

patient visits to the ER in East Java province in 2014 were 8,201,606 cases². Data on patient visits to the ER at the University of Muhammadiyah Malang Hospital (UMM Hospital) in 2017 were as many as 25,715 cases³.

The high frequency of patient visits to the ER will disrupt the service process in the ER (National Center for Health Statistics, 2008). Besides, the density of services provided to patients with emergency conditions has an impact on decreasing the quality of service to patients⁴. In this regard, a patient management system or management is needed which will determine the assessment of medical or nursing actions called triage. Triage is a decision-making process in prioritizing the

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needs and therapy given to patients in the ER based on the level of emergency⁵. The existence of an optimal and systematic triage system can reduce the waiting time (length of stay) of patients in the emergency room and improve the quality of health services⁶.

Triage is the initial activity performed by nurses when the patient comes to the ER. The accuracy of triage decisions has a significant impact on patient outcomes. There are still many nurses working in the IGD who lack knowledge and skills about triage. In general, two factors affect the accuracy of nurses' decision-making in implementing triage. The first factor is an internal factor that describes the knowledge, work experience, and training of nurses, while the second factor is an external factor covering matters related to the work environment and workload. Ignoring internal and external factors can cause the implementation of triage to be inaccurate and result in permanent disability in patients⁷. Another study states that the absence of guidelines and socialization regarding filling out the 5-level triage scale raises doubts for triage nurses to determine the patient's triage scale, thus making the triage assessment undertriage and over triage. The inaccuracy of filling in the triage scale is the first step in the occurrence of long waiting times and affects the satisfaction rate and patient safety⁸.

In its application, triage guidelines are important for triage officers and medical personnel in determining the success of medical intervention and management in patients because they can be used as a reference in determining patient emergency measures⁹. Failure to determine the right level of priority based on triage will result in delayed intervention in patients with critical conditions so that which will have an impact on the worsening of the condition which can lead to morbidity and mortality¹⁰. The ability of health workers to carry out triage will affect the interventions that will be carried out on patients¹¹. Related to this, there are several factors behind this, including knowledge of triage and work experience. Besides, several other factors also influence, among others, the work environment and personal characteristics¹². This statement is also supported by (Fakhari, Ranjbar, Dadashzadeh, & Moghaddas, 2005)¹³

who say that triage decision making can be influenced by personal factors including experience, assessment skills, training that has been followed, strength in decision making, skills and teamwork, flexibility, knowledge, and the sharpness of the ability to identify problems.

Besides, other research states that to do the correct triage requires a high cognitive process as well as skills, expertise, competence, qualifications, and readiness in making triage decisions¹⁴. Other results add that sufficient work experience, awareness of signs and symptoms of disease, adequate equipment and resources have a very important role in carrying out the correct triage¹⁵. In other results, it is said that the accuracy of triage is determined by internal/intrinsic factors which include fear of making mistakes in dangerous situations, insight, clinical qualifications, and the ability of nurses as well as external factors such as work environment stress, high workload, and work environment density¹².

Based on a preliminary study conducted at UMM Hospital, the triage system used in the last 7 years has undergone 2 changes, namely in the first year at the opening of UMM Hospital using the Simple Triage And Rapid System (START) and in the 5th year using Australian Triage Scale (ATS) which has been modified according to the needs of the hospital and following the existing room in the ER at UMM Hospital. This triage system has only been implemented in UMM Hospital IGD for the last 3 months. ER UMM Hospital often experiences a lot of patient congestion, with the number of patient visits every day around 45-55 patients and the number of patient visits per week around 350-400 patients.

Materials and Methods

This research is a type of quantitative research using an analytic observational research design using a cross-sectional approach. The population in this study were all male and female nurses who worked and were active until now in the ER at UMM Hospital, amounting to 30 people. The sampling technique used in this study was the total sampling technique so that this study the samples were all nurses who worked actively, both men

and women in the ER at UMM Hospital, totaling 30 emergency nurses.

The data used in this study are primary in the form of a questionnaire sheet. The questionnaire sheet consists of a questionnaire, namely a questionnaire that must be filled in by the nurse who conducts the triage, namely knowledge, and the questionnaire sheet which is observed by 2 enumerators who are Triage Course certified. Several statements based on indicators that have been compiled by researchers related to knowledge about triage, work experience, and the skills of nurses in conducting triage, and statements of decision making in the ER in conducting triage to patients who come to the IGD UMM hospital. The work experience, education, and training questionnaires were taken from the characteristic data of respondents, namely emergency room nurses. The knowledge questionnaire came from the Emergency nurses association / ENA¹⁶.

Then modified by researchers. Furthermore, the skills questionnaire uses the Triage Skill Questionnaire/TSQ (Fathoni et al., 2013)¹⁷ modified by researchers. The decision-Making Questionnaire (DMQ) was modified by (French et al., 1993)¹⁸. Both questionnaires were modified and translated into Indonesian. The reliability test was carried out on 10 emergency room nurse respondents at Lawang Medika Hospital on August 26, 2019, with the results of the instrument being reliable because the alpha value was > 0.6.

Analysis of data using univariate analysis includes data on the characteristics of respondents, namely age, gender, education, and length of work of nurses. Univariate analysis on the independent variables includes knowledge, work experience, skills, education, and training. Meanwhile, for bivariate analysis using the Spearman Rank correlation test. Linear regression was used for multivariate analysis.

Results

Table 1 General Characteristics of Respondents (n=30)

General Characteristics	Frequency	(%)
Gender		
Male	16	53.3
Female	14	46.7
Education level		
Diploma	10	33.3
Bachelor	20	66.7
Length of Work		
< 3 months	5	16.7
1-1.5 years	9	30.0
2-2.5 years	4	13.3
3-4.5 years	7	23.3
>5 years	5	16.7
Training		
Triage	13	43.3
BLS	18	60
ALS	3	10
BTLS	10	33.3
ACLS	15	50
Disaster Management	10	33.3
GELS	5	16.7
Others	5	16.7

Based on table 1, explains the characteristics of the respondents based on gender. From the picture above it is known that. The highest number of nurses in the Emergency Room at the General Hospital of the University of Muhammadiyah Malang were male (53.3%). Characteristics of respondents based on the level of education, it is known that the majority of nurses in the Emergency Room Hospital Muhammadiyah University of Malang have S1 education with a total of 20 nurses or 66.7%. Based on the length of work, IGD

nurses worked at most for 1-1.5 years with 9 nurses (30%). Based on training experience, it is known that nurses in the Emergency Room at the General Hospital of the University of Muhammadiyah Malang have attended the most BLS training (23%), and others include Advanced Cardiac Life Support / ACLS (19%) and Basic Trauma Life Support / BTLS (13%), ALS (4%), General Emergency Life Support / GELS (4%), disaster management 13% and those who attended triage training (16%).

Table 2. The Relationship Between Personal Factors and Triage Decision Making (n=30)

Personal Factors	Triage Decision Making	
	p	r
Knowledge	0,413	-0,155
Work experience	0,408	0,157
Skill	<0,000*	0,626
Education	0,039*	0,378
Training		
Triage	0,537	0,117
BLS	0,347	0,178
ALS	1,000	0,000
BTLS	0,204	-0,238
ACLS	0,871	-0,031
Disaster Management	0,897	0,025
GELS	0,016*	0,437*

* *p value* < 0,05

Based on table 2, it is found that there is no significant relationship between knowledge about triage, work experience, training which includes triage, BLS,

ALS, BTLS, ACLS, and Disaster management with triage decision making. There is a relationship between skills, education, and GELS training and triage decision making.

Table 3. Personal Factors Influencing Triage Decision Making

Dependent variable	Independent variables	Regression Coefficient	t	p
Triage decision making (Y)	Constanta	25.723		
	Skill	0.288	3.961	0.000
	Education	4.416	2.262	0.032
a		= 0.05		
R		= 0.674		
Adjusted (R2)		= 0.454 (45.4%)		
F		= 11.211		

Based on table 3 shows the results of the bivariate test, it is known that 3 variables have a relationship with the dependent variable, namely skills, education, and GELS training. Therefore, the three independent variables will be analyzed using linear regression with the backward method. However, after being entered using the backward method, the results were not significant, so in the second (final) step, it was eliminated from the regression model, leaving skills and education. So that skills and education are the most dominant personal factors in influencing triage decision making in emergency room nurses with a variation of 45.4%.

Discussion

The relationship between knowledge and triage decision making

Based on the results of the data obtained, there is no significant relationship between nurses' knowledge of triage and decision making. Theoretically, with better knowledge, the better the decision-making should be. However, even though they have been given the same understanding of triage, many nurses still use visual triage according to the understanding of each nurse because it is faster according to the nurse and does not require a long time. Because each nurse had also

equipped themselves before entering the ER at UMM Hospital, besides that the nurses felt comfortable with it because several times the triage system in the IGD of UMM Hospital had changed because of hospital needs or because the head of the installation had changed 3 times and triage, too, was revamped. Therefore, the nurse uses each assessment which is considered the same as the other triage, in essence, sorting out the patients.

Research by (Purwoko, 2015)⁷ on 50 emergency room nurse respondents was conducted to measure the correlation between knowledge and the accuracy of nurses' decision-making in the implementation of triage. The results showed that there was a significant correlation between these 2 variables with a p-value of 0.000 and a correlation coefficient of 0.565. While research conducted by Khairina (2018)⁸ on factors related to nurse decision making in triage accuracy, it was found that the length of work was the most dominant factor with a p-value of 0.012 and an odds ratio value of 17.856.

A study presented and reported that nurses had insufficient knowledge about hospital triage, 39.94% of the responses to the knowledge level questions were correct in that study. They concluded their findings that in hospital emergency departments in Iran, nurses were

not equipped with triage knowledge. As well as nursing curricula for different nursing programs do not have sufficient triage process content to prepare nurses for these systems in the emergency department. It can be concluded that based on the results obtained, knowledge of triage among nurses is inadequate in Pakistan¹⁹.

Another study mentioned 100 nurses in three teaching hospitals in Pakistan, 69% of nurses were found to have poor knowledge of triage. The correct response to the entire questionnaire was 43.22%. With these findings, it is considered important to establish a knowledge improvement program through training that will help to build and improve the knowledge of nurses working in the ER²⁰.

The relationship between work experience and triage decision making

The Emergency Nurses Association (ENA) in the United States suggests that qualifications are stated to place triage nurses and may need more consideration, one of which is clinical experience, requiring them to have at least 6 months of experience in emergency resuscitation. However, it is recommended that you have at least 2 years of work experience in the ER to improve competence and triage skills²¹.

From this research, it is known that the nurses who work in the ER of UMM Hospital are very diverse, ranging from those who have worked for 5 to 6 years, and some who are new, namely 3 months. Even though before becoming IGD nurses, they had been briefed on the triage used in the ER, there are still many nurses who still use their respective understanding so that the triage assessment is following the understanding of each nurse. Nurses who have longer work experience are expected to be more skilled in conducting objective and subjective assessments, as well as in determining triage priorities for patients who enter the ER at UMM Hospital.

The results of this study are in line with the research of Considine et al. (2007)²² which states that there is no significant relationship between experience (length of work) and nurses' decision-making in conducting triage.

Experienced nurses as well as nurses with little or less clinical experience may have the same ability to perform triage.

The relationship skills with triage decision making

Based on the results of research on the skills of nurses in making triage decisions, significant results were obtained. From this research, it is known that nurses who work in the ER UMM Hospital are very skilled in terms of assessment and anamnesis, meaning that some respondents have good skills. So the relationship between nurse skills and triage decision making has a positive correlation, indicating that the higher the skills of nurses in conducting triage, the higher the level of success in making appropriate decisions on patients.

Several factors have been identified as having contributed to the skills of nurses in triage. Among them, Chung (2005)²³ stated that training experience can improve nurses' skills about triage to identify patient priority scales, diagnose patients, and provide nursing interventions in the ER. To become skilled in triage, ER nurses are required to participate in training programs for triage and other related topics and renew every one to three years. Correct clinical assessment of the patient's condition requires thinking and insight, which is achieved based on knowledge and skills. The relationship between work experience and the achievement of work skills has been explained by the banner, it is explained that a nurse develops a process of skills and education through clinical experience, and after going through this their decision-making abilities will change and be correct.

Research conducted by Fathoni., Et al (2010)¹⁷ on the relationship between knowledge about triage, training, work experience, and triage skills in nurses in several hospitals in East Java showed that the level of skills of nurses was moderate, possibly due to emergency room nurses. have a lot of experience, and 82% of them have worked in triage. Besides, it was also stated that the majority of IGD nurses collaborated with doctors in conducting the triage process, so that this collaboration

could help nurses to have triage skills in making the right decisions in several circumstances. The research also resulted that training experience and knowledge had a positive relationship with triage skills, which reflected that the higher the knowledge and training that nurses participated in, the more skills about triage would also develop.

The relationship between education and triage decision making

Based on the results of research on nurse education in triage decision making, significant results were obtained. From this research, it is known that nurses who work in the IGD of UMM Hospital have an average education level of D3 and Nurse, meaning that some respondents have a good education. The positive correlation in the results of this study shows that the higher the education possessed by nurses, the higher the score for triage decision making.

For a nurse who works in an emergency service unit is very important to follow training, especially related to applied triage. CENA in 2007 provided guidelines that were a core component in the choice of triage for nurses consisting of history, knowledge, and applied triage practices, for example, using triage that was appropriate to hospital conditions, communication skills, primary and secondary surveys, assessment, and related triage decision making. with the type of patient condition such as trauma patients, pediatric patients, obstetrics, and gynecology²⁴.

Nursing education and high competence will increase the knowledge and skills of nurses in conducting triage assessments quickly and accurately. nurses who have high education and have competencies related to triage can improve nurses in making triage decisions in the emergency room. This high education and competence of nurses is the main basis for nurses to be able to assess the appropriate triage category according to the patient's condition to improve nurse performance and better outcomes²⁵.

The relationship between training and triage decision making

Based on the results of the data obtained, there is a significant relationship between GELS training for nurses on triage and decision making, however, in several other pieces of training, there are no significant results. After the GELS training was entered using the backward method, the results were not significant, so in the second (final) step it was eliminated from the regression model. Theoretically, the better the training, the better the decision-making. However, even though nurses have been given the same understanding of triage and each of them has attended outside training to support personal abilities, many nurses still use visual triage according to their respective understanding because it is faster according to the nurse and does not require a long time, besides The nurse felt comfortable with it because several times the triage system in the IGD of UMM Hospital had changed because of the needs of the hospital or because the head of the installation had changed 3 times and the triage was also changed. Therefore, the nurse uses each assessment which is considered the same as the other triage, in essence, sorting out the patients.

For a nurse who works in an emergency service unit is very important to take part in training, especially related to applied triage. CENA in 2007 provided guidelines that were a core component in the choice of triage for nurses consisting of the history, knowledge, and practice of applied triage, for example using triage that was appropriate to hospital conditions, communication skills, primary and secondary surveys, assessment and related triage decision making. with the type of patient condition such as trauma patients, pediatric patients, obstetrics, and gynecology²⁴.

Personal factors influencing triage decision making

The results of the multivariate analysis showed that the personal emergency nurse factors that most influenced triage decision-making were skills and education. These factors explain 45.4% of the variation in emergency nurse decision-making. Triage skills in emergency

nursing are defined as the ability of emergency nurses to use their decision-making skills to prioritize patients into appropriate categories in a fast time. Nurses' skills in conducting triage include rapid assessment, patient categorization, and patient allocation¹⁷. Yuliastuti, 2007²⁶ states that the higher the skills possessed by the workforce, the more efficient the body, energy, and thoughts are in carrying out work.

Education is a process of awareness that occurs because of the interaction of various factors concerning humans, the environment, and their potential. Education in the field of nursing is a process of awareness and self-discovery as nursing personnel who have maturity in thinking, acting, and acting as professional nurses, so that they can answer various challenges in their personal and professional life. Higher education is related to triage decision-making (Kusnanto, 2003)²⁷.

Conclusion

There is a relationship between GELS skills, education and training, and triage decision-making. There is no relationship between the knowledge and work experience of nurses with triage decision-making. Skills and education are personal emergency nurse factors that significantly influence triage decision-making in the Emergency Room at the University of Muhammadiyah Malang Hospital.

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