

## Original Article

**TRIAGE KNOWLEDGE OF EMERGENCY ROOMS NURSES AT DR SOETOMO REGIONAL GENERAL HOSPITAL**Fariza Nur Aini<sup>1a</sup>, April Poerwanto Basoeki<sup>2</sup>, Djohar Nuswantoro<sup>3</sup><sup>1</sup> Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia<sup>2</sup> Department of Anesthesiology and Reanimation, Dr. Soetomo General Academic Hospital, Universitas Airlangga, Surabaya, Indonesia<sup>3</sup> Department of Public Health and Preventive Medicine, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia<sup>a</sup> Corresponding author: [fariza.nuraini@fk.unair.ac.id](mailto:fariza.nuraini@fk.unair.ac.id)**ABSTRACT**

**Introduction:** Triage is a system to sort patients based on their urgency for care during an emergency. In addition, to determine patient's severity, triage reduces time wasted and overcrowding in the emergency room.<sup>1</sup> Triage errors such as over-triage or under-triage must not exceed 35% and 5% of the total numbers of patients respectively. Dr. Soetomo General Hospital of Surabaya with its status as one of type "A" hospital in Indonesia that has good amenities, facilities, and infrastructures which is also the main referral hospital from Primary or Secondary Health Care, is prone to patients overcrowding. The high number of patients and the demands for high-quality service as the main referral hospital require higher qualification from health care professionals in term of cognitive, skills, and attitude. **Objective:** This study conducted to evaluate the level of knowledge of the ER (Emergency Room) nurses at Dr. Soetomo General Hospital in 2019 towards triage. **Methods and Materials:** This study is a quantitative descriptive study using a validated questionnaire with 32 nurses as the samples. **Results and Discussion:** Demographic profile showed that majority of nurses are: female (52%), age 26 – 35 years old (46 %), graduated from D3 (61%), have been working in this field for >15 years (46%), attended Basic Life Support Training (33%), and have moderate knowledge in triage (61%). **Conclusion:** Emergency room nurses of Dr. Soetomo General Hospital had adequate knowledge in triage. The researcher considers there might be some factors influencing nurse's knowledge in triage.

**Keywords:** Emergency; Emergency Department; Emergency Nursing; Triage Nurse; Triage**ABSTRAK**

**Pendahuluan:** Triase adalah sistem pemilahan kondisi Korban/Pasien Gawat Darurat. Selain untuk mendeteksi tingkat kegawatan pasien, triase juga memiliki peranan penting dalam mengurangi waktu yang terbuang dan kepadatan pasien di IGD. Kesalahan dalam triase seperti over-triage persentasenya tidak boleh lebih dari 35% dari total pasien yang ditriase dan kesalahan under-triage persentasenya tidak boleh lebih dari 5% dari total pasien yang ditriase. Rumah Sakit Umum Daerah Dr. Soetomo dengan predikatnya sebagai salah satu rumah sakit tipe "A" yang memiliki fasilitas, sarana, dan prasarana paling lengkap dan juga merupakan rumah sakit rujukan utama dari faskes tingkat satu maupun dua, membuatnya rentan terjadi kepadatan pasien. Banyaknya pasien dan tingginya tuntutan mutu sebagai rumah sakit rujukan tersier menuntut kualifikasi tenaga medis yang lebih tinggi baik dari aspek pengetahuan, keterampilan dan sikap. **Tujuan:** Penelitian ini dilakukan untuk mengetahui gambaran tingkat pengetahuan perawat IGD RSUD Dr Soetomo Surabaya Tahun 2019 terhadap triase. **Metode dan Bahan:** Penelitian ini merupakan penelitian deskriptif kuantitatif menggunakan instrumen kuisioner tervalidasi dengan 32 perawat sebagai sampel. **Hasil dan Pembahasan:** Profil demografis perawat IGD RSUD dr Soetomo tahun 2019 menunjukkan bahwa mayoritas perawat adalah: berjenis kelamin perempuan (52%), berusia 26-35 tahun (46%), lulusan D3 (61%), lama kerja >15 tahun (46%), pernah mendapatkan pelatihan PPGD (33%), dan memiliki pengetahuan yang cukup terhadap triase (61%). **Kesimpulan:** Tingkat pengetahuan perawat IGD (Instalasi Gawat Darurat) RSUD Dr Soetomo rata rata masuk kedalam kategori cukup adekuat untuk melakukan triase dengan benar. Peneliti mempertimbangkan adanya faktor lain yang mempengaruhi pengetahuan perawat terhadap triase.

**Kata Kunci:** Kegawatdaruratan; IGD (Instalasi Gawat Darurat); Keperawatan Gawat Darurat; Perawat Triase; Triase

## INTRODUCTION

Triage was first used by a French military doctor to assess the soldier's condition and their priority to get treatment.<sup>2</sup> Indonesian Ministry of Health defined triage as a system used to sort patients based on their conditions in an emergency.<sup>3</sup>

Triage has become a mandatory section in every hospital's emergency department. Triage help clinician determining priority not only by looking at the clinical condition of the patient but also the survival rate after receiving treatment. Triage can also be done by nurses or doctors at hospital wards.

Triage has different mechanisms based on the condition it is performed. Triage performed in hospital differs from field triage by the default that the hospital has sufficient resources to manage a huge amount of patients. However, field triage performed in the disaster has a smaller amount of resources. Therefore, triage has to be very selective and detail on assessing patient's condition and prognosis patient's outcome. In hospital triage, all patients will eventually get the treatment needed, but in field triage patients with better condition and survival rate will get higher priority than patient with the worse condition and lower survival rate.

Triage tag uses colors to differentiate the patient's conditions. Colors frequently used as triage tag are blue, red, yellow, green, white, and black. Dr Soetomo General Academic Hospital uses CTAS (Canadian Triage and Acuity Scale) with modification since 2018.

Triage errors can be classified as under-triage and over-triage. Under-triage is an inadequate triage placement (below the level of emergency that should be), thereby increasing the risk of worsening the patient's condition while waiting.<sup>4</sup> Over-triage is a

triage error where patients who are supposed to have a low emergency level are considered high emergencies.<sup>5</sup> Over-triage should not be more than 35%, and under-triage errors should not exceed 5% of total patients.<sup>5</sup> Errors in triage will certainly be very closely related to the prognosis and length of patient treatment. The lack of data documenting these errors results in underestimation and unsolved problems. A study conducted at a general hospital in Yogyakarta portraits at least 20% errors in triage.<sup>6</sup>

The aim of this study is to evaluate the level of knowledge of nurses in the Emergency Department of Dr Soetomo General Hospital against triage.

## MATERIAL AND METHOD

This study was descriptive qualitative research. The sample in this study has taken from all ED nurses at Dr Soetomo Regional General Hospital Surabaya that fulfilled the inclusion criteria and selected by total sampling method. The inclusion criteria were all ER (Emergency Room) nurses who worked on the first floor at Dr Soetomo Regional General Hospital according to the employee's data taken on January 2019, and all subject have given informed consent. The exclusion criteria were ER (Emergency Room) nurses who fulfilled the inclusion criteria but resigned during the period of research.

This study was located on the first floor of Emergency Department at Dr Soetomo General Hospital and done during nurse's work hours from November 2018 until July 2019. This study retrieved data needed using a validated questionnaire that contains demographic data including gender, age, last education degree, followed by other variables such as length of service and training. The



questionnaire contained eight questions to assess the triage knowledge of study subject. Data were analysed using IBM SPSS Statistic 24 software.

## RESULT AND DISCUSSION

**Table 1.** Research Subject Distribution Based on Their Demographic Profile

No	Variables	Frequency	Percentage
<b>Gender</b>			
1	Female	17	52%
	Male	16	48%
<b>Age</b>			
2	<26 years old	1	3%
	26-35 years old	15	46%
	36-40 years old	9	27%
	>41 years old	8	24%
<b>Last Education Degree</b>			
3	D4	1	9%
	D3	15	61%
	S1	9	30%
	S2	0	0%

Subjects at Dr Soetomo General Hospital mostly were female (52%), and the rest were male. This study is in line with study at Tangerang District General Hospital, wherein the study found most nurses were female (76.1%), compared with men (23.9 %).<sup>7</sup> This result is also comparable to a study at Prof. Mental Hospital Dr. V. L. Ratumbusang of North Sulawesi Province in September - October 2016 where most nurses were also female (85%).<sup>8</sup> A study about Canadian and American nurses had similar nurse's gender distribution where most active nurses were female (95%).<sup>9</sup>

Many factors affected the difference between the number of male and female nurses, such as heavy and menial work done frequently by male nurses<sup>10</sup>. Isolations and unpleasant experience such as hostility were

commonly done by female nurses against male nurses.<sup>11</sup>

Most subjects were in the range of 26-35 years old (46%). The results of this study are similar to a study in Manado where most nurses were 26-35 years old (56.8%), followed by under 26 years old (34.1%), and lastly more aged than 35 years old (9.1%).<sup>12</sup> Similar results were also found in the study at a primary care facility in Malang, where 47% of nurses were 21-30 years old. Followed by 31-40 years old nurses (23%), 41-50 years old nurses (22%) and the remaining 8% in the range of 51-60 years old.<sup>13</sup> However, there are differences found in the study conducted in Premiere Hospital of Surabaya where most nurses were under 26 years old(44%).<sup>14</sup>

The age range of 25-45 years is a stage of development of generativity compared to stagnation, where one pays attention to ideas, desires to share knowledge, and enhances creativity.<sup>15</sup> This might be considered as productive period. In the mid-40s, physiologically, there is a decrease in sensory ability which usually begins with a decrease in visual acuity, which can also be followed by a decrease in hearing function.<sup>16</sup> Overworking in old age is also very closely related to chronic pain such as neck pain, back pain, and pain related to inflammatory processes such as arthritis and other musculoskeletal disorders.<sup>17</sup> Nurses on their unproductive period with hard work were prone to chronic pain condition.<sup>18</sup>

ER (Emergency Room) nurses in Dr Soetomo General Hospital mostly graduated from D3 degree (61%). A study at the general hospital in Semarang where most nurses last education was D-3 (68.9%).<sup>19</sup> A study at the general hospital in Tangerang also showed most nurses educated from D3 (82.1%) .<sup>7</sup> Study in Manado also found most nurses were D3 graduate (77.3%) followed by S1 graduate

(15.9%).<sup>12</sup> A similar thing was found in Sinjai General Hospital, South Celebes, where the majority of respondents graduate from D3 (61%).<sup>18</sup>

Nursing staff with higher education will perform better because they already have broader knowledge and insight. Diploma education prioritizes work practice rather than theory when compared to the level of undergraduate education.<sup>19</sup> This is relevant with the work of nurses who need a lot of work practices in providing excellent service and forming good, caring behaviour for patients. The higher level of formal education results in increased expectations in terms of career and job acquisition and income. However, the available employment does not always match the level and type of knowledge and skills possessed by those job seekers.<sup>20</sup> Nurses who graduate from diploma education are also proven to have work efficiency and better job performance than nurses with SPK education.<sup>21</sup>

**Table 2.** Subject's Distribution Based on Their Length of Service, Training Types and Training Frequency

No	Variables	Frequency	Percentage
<b>Length of Service</b>			
1	<5 years	2	6%
	6-10 years	9	27%
	11-15 years	7	21%
	>15 years	15	46%
<b>Training Types</b>			
2	BLS	25	35%
	ATLS	6	8%
	EKG	4	6%
	ACLS	3	4%
	PPGD	24	33%
	Code Blue	7	10%
	BTCLS	3	4%
<b>Training Frequency</b>			
3	Once	13	40%
	Twice	11	33%
	Three times	5	15%
	Three times	0	0%

Four times	2	6%
Five times	2	6%
Six times	0	0%
Seven times	0	0%
More than seven times		

The most extended length of a nurse's service in the ER (Emergency Room) of Dr Soetomo General Hospital was over 15 years. The results of this study are similar to the study in Datoe Binangkang General Hospital with most nurses worked over five years (78.8%).<sup>22</sup> This is contrary to a study at the general hospital in Tangerang where the largest proportion were most nurses only worked under five years (37%).<sup>7</sup> Nurses who have a working period of < 7 years are said to perform worse (55.6%) than those of 7-12 years (45.3%).<sup>23</sup> The length of service is also linked to more experience the nurse has in providing nursing care in accordance with applicable standards or fixed procedures.<sup>24</sup>

Most nurses have served for more than 15 years at ER (Emergency Room), majority of nurses have attended at least one training, and the most attended training by ER (Emergency Room) nurses is BLS (Basic Life Support) training. The results of this study are similar from a study in Karanganyar General Hospital where most nurses also received PPGD training (66,7%).<sup>25</sup> However, it has been proven statistically that there is no correlation between the training of nurses on nurse performance.<sup>26,29</sup> On the contrary, a study with a different subject (high school students) on the effect of basic life support theory training on pulmonary resuscitation knowledge, stating that there is a correlation between training and knowledge.<sup>30</sup>

**Table 3.** Study Subject's Distribution Based on Their Knowledge on Triage.

No	Triage Knowledge	Frequency	Percentage
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1	Good	20	27%
2	Average	45	61%
3	Bad	9	12%

Results from the study questionnaire reveal that most ER (Emergency Room) nurses at Dr Soetomo General Hospital have adequate knowledge of triage.

**Table 4.** Frequency Distribution of Triage Error Based on The Study Subject's Questionnaire Results.

No	Triage Error	Frequency	Percentage
1	Under-triage	13	5%
2	Over-triage	68	26%
3	Accurate	183	69%

Results from the study questionnaire reveal that most common mistakes are over-triage.

## CONCLUSION

Subject's knowledge is generally in the category of adequate to do the triage correctly. Triage knowledge is a complex multifactorial matter that depends on other variables such as gender, age, last education degree, length of service, training, and individual factors of nurses. All of which,—frequency of nurse's training is the only variable that correlates with the level of nurse knowledge on triage.

Many factors are contributing to this study results regarding nurse's knowledge on triage such as sample size, subject's condition when filling the questionnaire, work hours, or nurse's tasks at the moment. Researchers suggest the results of this study to be taken seriously as a consideration to do an overall competency test or training for the ER (Emergency Room) nurses.

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