



WEB-BASED TRIAGE ANALYSIS (TRIAGE GO) ON SPEED AND ACCURACY OF SERVICE

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ABSTRACT

The increasing number of visits to the ER requires nurses and ER staff to move quickly in assessing the condition and sorting patients based on their severity. This is to determine the priority of patient management. The administrative process for registration often takes a long time so that nurses still use paper to perform initial triage on patients. In this digital era, technology-based solutions are becoming increasingly relevant, especially with the increasing use of digital platforms worldwide. Method: Article search using electronic databases such as Pubmed, Science direct, and Google Scholar. The search for articles used were articles published in 2019-2024, using the keywords "Triage" AND "Web Triage" AND "Speed" OR "Accuracy" OR "ER Service". Results: Based on 10 articles obtained, it was found that the use of Web-based Triage is one of the implementations of innovation that can be applied to improve the quality of service time in the ER. Analysis of web-based Triage (TRIAGE GO) can influence the speed and accuracy of service in the ER of Cilacap Regional Hospital. Conclusion: Web-based triage system as the best solution to optimize services in Emergency Installation.

Keywords: er room; speed and accuracy of service; triage go

How to cite (in APA style)

Ramliana, A., & Triyanto, E. (2025). Web-Based Triage Analysis (Triage Go) on Speed and Accuracy of Service. *Indonesian Journal of Global Health Research*, 7(5), 437-446. Retrieved from <https://jurnal.globalhealthsciencegroup.com/index.php/IJGHR/article/view/6768>.

INTRODUCTION

The increase in visits to the Emergency Room requires nurses and Emergency Room staff to move quickly to assess conditions and sort patients based on their severity. This is to determine the priority of patient management. The time required for patient assessment is also called Triage time. Triage time is part of triage. The fate of the victim depends on the accuracy of triage and the speed of management or called response time, the speed of response time affects the level of patient satisfaction (Virgo, 2018). The increase in patient visits to the Emergency Room affects the level of triage delays. The results of the Talibo et al 2023 study obtained the results of triage carried out manually in filling in with observations and interviews, there was incomplete filling so that there was a delay in the triage reporting process because nurses after carrying out triage and doing manual checklists on the triage form paper had to convey the results manually to doctors or other health workers (Talibo et al 2023 in Azhar et al 2024).

The Emergency Department is one of the departments that frequently receives complaints about the quality of service. One form of service quality that people often complain about is waiting time. Waiting time is the time from the patient registering until being examined by a doctor (Siti, Ratna and Alik, 2019). Waiting time 10 as one of the key indicators for assessing the efficiency of improving operational and clinical performance (Ardiyani, Andri and Eko, 2015). According to Moewardi (2003), one indicator of the success of medical treatment for emergency patients is the speed of providing adequate assistance to emergency patients both in routine daily situations or during disasters (Rembet, Mulyadi and Malara, 2015). In Indonesia, the term triage is also called triase. Both terms have the same essence, namely the

term for sorting or classifying patients based on the severity of injury and to determine the type of treatment based on the level of emergency trauma, disease and injury (Puspongoro, 2010 in Mardalena, 2017). Meanwhile, according to (Wijaya, 2010 in Mardalena, 2017) triage is an effort to select victims before being treated. The selection is based on a special patient process based on the severity of the patient's illness. Triage is a way of sorting patients based on therapeutic needs and available resources. Therapy is based on ABC conditions (Airway, with cervical spine control, Breathing and Circulation with bleeding control) (Gustia and Manurung, 2018). Triage marking is done by looking at the color on the triage accuracy observation sheet used. After triage, patients will be placed according to their triage group (Worku and Loha, 2017). Triage is defined as the process of sorting patients according to their severity. Patients will receive services according to their condition and level of emergency. During or after the triage process, the patient's family or companion is simultaneously directed to register the patient's identity, then the patient will be served by the on-call doctor and nurse (Amri, Manjas and Hardisman, 2019).

Waiting Time is the length of time a patient waits for health services, measured from when triage is carried out until anamnesis is carried out or action is taken by Emergency Installation officers. Waiting for a long time causes patient/customer dissatisfaction (Balasaro, 2014). One form of service quality that people often complain about is waiting time. Long waiting times risk reducing patient satisfaction and service quality (Siti, Ratna and Alik, 2019). Patients will consider health services to be poor if their illness does not heal quickly, waiting times are long, and health workers are unfriendly even though they are professional (Sari, Erianti and Marni, 2020). In the era of the industrial revolution 5.0, the industrial revolution period of digitalization in all elements is increasingly useful in improving human activities including health workers. Revolution 5.0 technology is very beneficial for health in terms of integrating digital, biological, and physical systems. In this digital era, technology-based solutions are becoming increasingly relevant, especially with the increasing use of the Android platform worldwide. Android, as a widely used mobile device operating system, offers wide accessibility and flexibility for users, including health care workers. Android-based web applications for triage recording in the Emergency Room are considered very helpful because they can update patient data in real time so that it will be easier to monitor patients.

In achieving minimum service standards in the Emergency Installation Room of Cilacap Regional Hospital, data was obtained on the response time indicator for doctor services in the emergency room after the patient arrived, which was still less than the standard time of less than 5 minutes served after the patient arrived, while the achievement was 6.17 minutes served after the patient arrived (Cilacap Regional Hospital Profile, 2023). In response to the challenges of problems that arise in the Emergency Installation service, Cilacap Regional Hospital continues to innovate by releasing digitalization of information on the stages of Emergency Installation patient services to maximize Emergency Installation triage at Cilacap Regional Hospital (Cilacap Regional Hospital Profile, 2021). The purpose of this study is to review and analyze various literatures that discuss the implementation of web-based triage systems, especially the TriaSe Go application, in improving the speed and accuracy of services in emergency installations. Through a literature review approach, this study aims to identify the benefits, challenges, and impacts of implementing triage digitalization on the efficiency of service flows and timely clinical decision making.

METHOD

The author conducted a literature search using two search engines/databases, namely PubMed and Google Scholar using the keywords "Triage" AND "Web Triage" AND "Optimization" OR "Emergency Installation Services". Articles identified through the PubMed search engine

(n = 585) and Google Scholar (n = 127). Total (n = 712). Literature was analyzed using the PICO framework (P: Patient / Emergency Installation nurse service time, I: Web Triage, C: -, O: the use of web-based Triage on Android has an influence on service time. All triage interventions using the web system showed that they further shortened the service time for Emergency Room patients. The inclusion criteria for selecting the literature for this study were literature published in the last 5 years (2019-2024), literature on topic, namely the use of web-based triage, articles published in Indonesian and English. While the exclusion criteria were articles that did not match the topic, articles published more than 5 years ago, articles using a foreign language other than English, articles with high bias and no full text available. After finding various articles, 712 articles were then screened by title and obtained 100 articles. Of the 100 articles, there were only 35 articles that discussed the implementation of the influence of the use of Web-based Triage, then when adjusted to the inclusion and exclusion criteria, the researcher selected 10 articles that were available in full text and had no language constraints.

The ten articles will then be reviewed and assessed the quality of the articles according to the method used in the article. For the cross-sectional method, the articles are reviewed using the Checklist for cross-sectional studies from the Joana Briggs Institute which consists of 8 question items. While for Descriptive study research, the assessment uses the Checklist for Prevalence Studies.

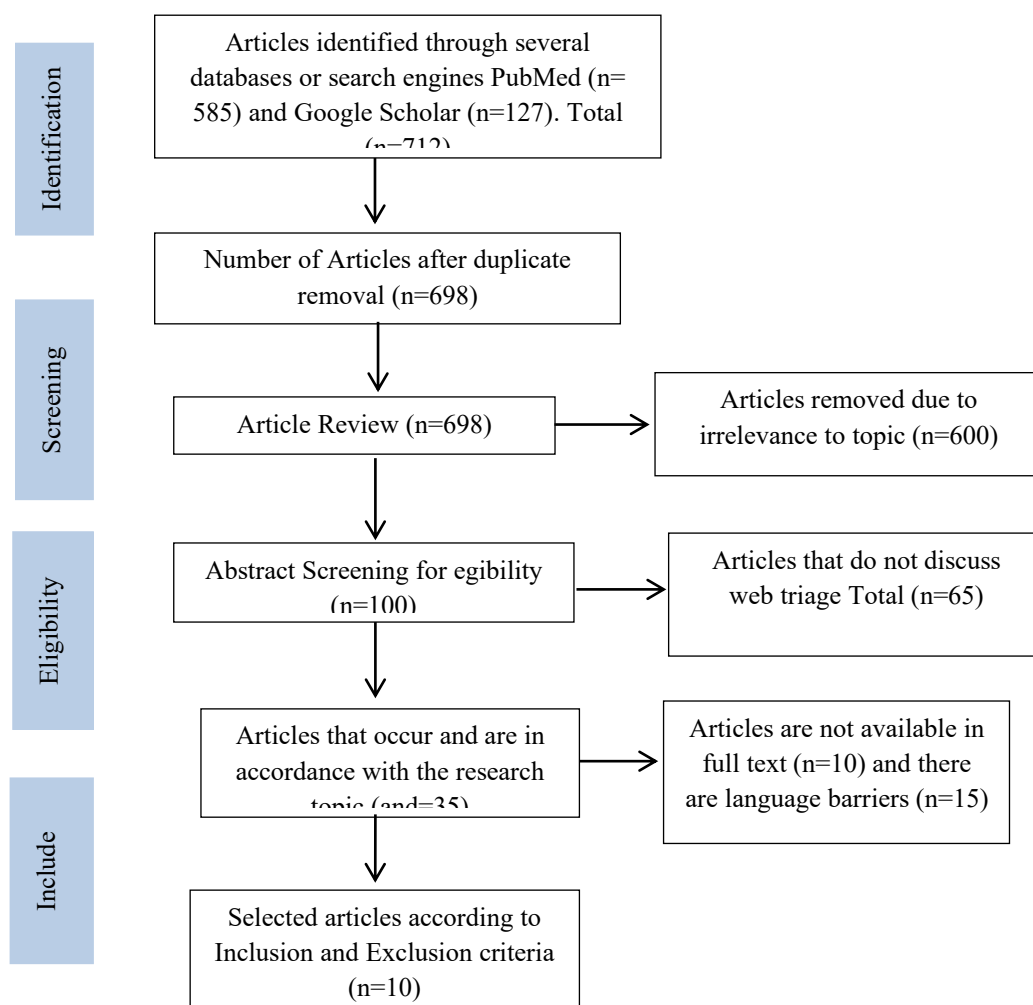


Figure 1. Research article selection process chart using Prima Chart

RESULT

literature search conducted on Google Scholar and Pubmed, the author found 10 articles to be reviewed from 698 articles that match the keywords. Articles originating from publications for the period 2019-2024 are summarized in the table below.

Table 1.
Review Results

No	Research Title and Author	Research Design, Samples and Sampling Techniques	Research result	Research Limitations
1	Relationship between Android-Based Triage and Patient Satisfaction Level in the Emergency Room of Taman Husada Hospital Authors: Bontang, Zainab, Rahman, Firdaus, Gajali, Rivan	This study is a descriptive quantitative study using a cross-sectional approach. The variables studied were the knowledge of the patient's family about the implementation of triage. The population in this study were the patient's family who accompanied the patient in the Emergency Installation. The number of samples involved in this study was 90 respondents.	Based on the bivariate variable analysis of the relationship between android-based triage and patient satisfaction in the Emergency Installation at Taman Husada Bontang Hospital, a p value of 0.001 (<0.1) was obtained, which means that there is a relationship between android-based triage and patient satisfaction in the Emergency Installation at Taman Husada Bontang Hospital. In addition, an OR (Odd Ratio) of 2.385 was also obtained, which means that android-based triage has a 2.385-fold effect on patient satisfaction in the Emergency Installation at Taman Husada Bontang Hospital.	There is no instrument to measure patient satisfaction.
2	Implementation of Triage by Nurses in the Emergency Installation of Lembang Regional Hospital Author: Tuti Herawati, Dhea Sofhya Gustina, Desi Sundari Utami	This research method uses a quantitative descriptive method with an observation method. The sample consisted of 20 nurses taken using a saturated sampling technique. Data collection used a 15-item checklist questionnaire that had been tested for validity and reliability by Hadi (2016)	This study found that 55% of respondents carried out triage well, while 45% of respondents carried out triage poorly. In conclusion, most nurses were able to carry out triage well.	The research is in the form of a report and there are no measurable outputs in the research.
3	Utilization of Expert System to Determine Emergency Situation of Toddler Patients in emergency installation Writer: The story of the ...	The type of research used is quantitative research with a quantitative descriptive design, the descriptive research design of which uses a descriptive cross-sectional study approach. The population is all nurses in the Emergency Room of Temanggung Regional Hospital in 2022.	The number of respondents who were able to determine the type of triage of patients who came to the Garurat Emergency Installation of Temanggung Regional Hospital correctly was 9 respondents (47.4 %) and those who were not correct were 10 respondents (52.6%). There was no relationship (p value 1.000) between the level of nurse	The characteristics of the research respondents were not explained in detail.

No	Research Title and Author	Research Design, Samples and Sampling Techniques	Research result	Research Limitations
			knowledge and the accuracy of emergency installation nurses in applying the Emergency Severity Index (ESI) triage.	
4	Implementation of Emergency Triage Information System for Outpatients at Hospital X Writer : Azhar Nawawi, Candra Mecca Sufyana, Erix Gunawan	Researchers choose the Black Box Testing Method, a technique used to evaluate all software without the need to analyze individual programs. Testing is done by selecting a program that has been designed and then the data is entered into each form. Testing is done to understand that the program operates according to the requirements	computerized Emergency Installation triage information system at hospital x are useful for supporting emergency installation triage reporting that is no longer manual. The researcher designed a program that aims to facilitate triage filling. The researcher used Visual Studio 2010 as the software.	There were no Outcomes measured in the study
5	Desktop Application Triage System For Emergency Level Priority Support Writer: Joseph Agus Pramoto, Suryo Adi Wibowo	Researchers design applications using Delphi 7 and then perform functional testing to determine whether the function is in accordance with the needs or not. This testing is also carried out to overcome errors and test validation which is often carried out not in accordance with the terms of use of the application.	Functional testing results show that all triage application features are 100% running as expected.	There were no Outcomes measured in the study
6	The use of Kiosks to Improve Triage Efficiency in the Emergency Department Author: Michael Jose Joseph , Matthew Summerscales , Saiesha Yogesan , Anthony Bell , Michele Genevieve and Yogesan Kanagasingam	Methods a broad narrative literature review was conducted. Published papers from the last 10 years (2012-2022). We conducted a literature review into the effectiveness of kiosks in improving triage efficiency.	After rigorously searching five biomedical databases and screening candidate articles in Endnote, we identified nine papers pertaining to the introduction of kiosks in emergency departments. Six articles had positive findings—with E-triage interventions improving some aspect of the triage process—such as reducing pre-triage times. Conversely, only three articles reported negative findings, such as low uptake. Consequently, EDs should consider introducing kiosks to complement the current nurse-led triage process and thereby promote better patient outcomes	Tidak ada Luaran yang diukur dalam penelitian
7	Medical emergency department triage data processing using a machine-	This paper focuses on the general clinical problem of the complex correlation between medical records	Overall, in all experiments, the NN-Sequential model had better results, having, in	Penelitian dilakukan dengan sistemati review

No	Research Title and Author	Research Design, Samples and Sampling Techniques	Research result	Research Limitations
	learning solution Author: Andreea Vantu, Anca Vasilescu, Alexandra Baicoianu	and later diagnosis and, especially, on the process of emergency department triage which uses the Emergency Severity Index (ESI) as triage protocol. This study presents a comparison between three different Machine Learning models, such as Logistic Regression, Random Forest Tree and NN-Sequentail, with the purpose of classifying patients with an emergency code. We conducted four experiments because of imbalanced data. A web-based application was developed to improve the triage process after our theoretical and exploratory results.	the first experiment, a ROC-AUC score for each ESI emergency code of: 0.59%, 0.76%, 0.71%, 0.78% 0.64%. After applying methods to balance the data, the model yielded a ROC-AUC score for each emergency code of 0.72%, 0.75%, 0.69%, 0.74%, 0.78%. In the last experiment consisting of a three-class classification problem, the NNSequential and Random Forest Tree models had similar metric outcomes, and the NN-Sequential algorithm had a ROC-AUC score for each emergency code of: 0.76%, 0.72%, 0.84%.	
8	The FAST-ED App: A Smartphone Platform for the Field Triage of Patients With Stroke Author: Raul G. Nogueira, MD et al	Review of the application's platform and its development as well as the different variables, assessments, algorithms, and assumptions involved.	The FAST-ED (Field Assessment Stroke Triage for Emergency Destination) application is based on a built-in automated decision-making algorithm that relies on (1) a brief series of questions assessing patient's age, anticoagulant usage, time last known normal, motor weakness, gaze deviation, aphasia, and hemineglect; (2) a database of all regional stroke centers according to their capability to provide endovascular treatment; and (3) Global Positioning System technology with real-time traffic information to compute the patient's eligibility for intravenous tissue-type plasminogen activator or endovascular treatment as well as the distances/transportation times to the different neighboring stroke centers in order to assist Emergency Medical Services professionals with the decision about the most suitable destination for any given patient with	Penelitian berupa laporan 2 kasus pada pasien DM sehingga tidak ada luaran yang diukur dalam penelitian tersebut

No	Research Title and Author	Research Design, Samples and Sampling Techniques	Research result	Research Limitations
9	Clinical Decision Support Systems for Triage in the Emergency Department using Intelligent Systems: a Review Author: Marta Fernandes, Susana M. Vieira, Francisca Leite, Carlos Palos, Stan Finkelstein, João M.C. Sousa	We applied a standard scoping review method with the manual search of 6 digital libraries, namely: ScienceDirect, IEEE Xplore, Google Scholar, Springer, MedlinePlus and Web of Knowledge. Search queries were created and customized for each digital library in order to acquire the information. The core search consisted of searching in the papers' title, abstract and key words for the topics "triage", "emergency department"/"emergency room" and concepts within the field of intelligent systems	acute ischemic stroke From the review search, we found that logistic regression was the most frequently used technique for model design and the area under the receiver operating curve (AUC) the most frequently used performance measure. Beside triage priority, the most frequently used variables for modelling were patients' age, gender, vital signs and chief complaints. The main contributions of the selected papers consisted in the improvement of a patient's prioritization, prediction of need for critical care, hospital or Intensive Care Unit (ICU) admission, ED Length of Stay (LOS) and mortality from information available at the triage	Penelitian ini merupakan sistematik review
10	Mobile Triage Applications: A Systematic Review in Literature and Play Store Penulis: Isabel Herrera Montano, Isabel de la Torre Díez, Raúl López-Izquierdo, Miguel A. Castro Villamor, and Francisco Martín-Rodríguez	This research is based on a systematic review of the literature in scientific databases from 2010 to early 2021, following a prism methodology. A total of 26 relevant papers were obtained. for this study, of which 13 apps were identified. In the analysis carried out, it was detected that from 2019 onwards there has been an increase in research interest in this area, since the papers obtained from this year onwards represent 38.5% of the relevant papers	In this study it was also observed that despite the existence of many researches in this sense, only 3 apps contained in them are accessible. "TRIAGIST" does not allow the entry of an unidentified person user, "Major Trauma Triage Tool" presents negative comments from users who have used it and "ESITriage" lacks updates to improve its performance	There are no measurable outputs from the research.

DISCUSSION

Triage is a crucial process in the emergency department (ER) that aims to identify and prioritize patients based on their level of emergency. Accuracy and speed in the triage process will greatly determine the safety of patient lives, service efficiency, and satisfaction of health service users. In the digital era, conventional paper-based triage systems and manual observations are starting to be abandoned and replaced with web-based digital systems and applications, including development initiatives such as TRIASE GO. This transformation aims to improve accuracy, accelerate the decision-making process, and reduce the workload of health workers. Several studies have shown that digital triage has a positive impact on services. A study by Zainab et al. (2023) found that the implementation of an Android-based triage system significantly increased patient satisfaction in the ER, with a p value = 0.001 and

an odds ratio of 2.385. This shows that patients who are treated through a digital triage system feel more satisfied because they are more likely to receive fast and priority emergency treatment. This also indicates that digitalization not only improves the hospital's internal system but also improves patient perceptions and experiences of the services provided.

Nawawi et al.'s (2021) research confirms that the implementation of a computer-based emergency triage information system can eliminate manual processes that have been considered slow, inefficient, and error-prone. Through structured programming and an easy-to-use interface, filling out triage forms can be done faster and the results are directly integrated with the ER service report, thus supporting real-time reporting and faster decision-making by medical personnel. Furthermore, research by Pramoto and Wibowo (2022) showed that the desktop-based triage application they developed functioned well in all features, including emergency priority classification. The results of functional testing show the reliability of the technology in supporting a more systematic triage process, although the study has not touched on clinical outcomes directly. A more complex innovation was demonstrated by Vantu et al. (2023) through the integration of machine learning technology into a web-based triage system. Their research showed that the Sequential Neural Network algorithm produced the best triage classification performance, with an AUC score reaching 0.84 after data balancing was performed. This indicates that artificial intelligence has great potential to replace or accompany clinical decision making, especially in processing big data from medical records and patient symptoms quickly and accurately.

Furthermore, an international study by Michael Jose Joseph et al. (2022) examined the effectiveness of using digital kiosks in the triage process. Of the nine articles reviewed, six showed that implementing electronic triage kiosks accelerated pre-triage time and streamlined patient flow in the ED. Although some studies reported challenges such as low uptake by patients or families, overall the system was seen as an effective complement to the nurse-based triage process. In the context of using clinical decision support technology (CDSS), Fernandes et al. (2021) revealed that intelligent algorithm-based systems such as logistic regression can improve the accuracy of patient prioritization, predict ICU needs, and shorten the length of stay (LOS) of patients in the ER. Variables frequently used in this model include age, gender, vital signs, and chief complaint. These findings confirm that data-driven triage systems can provide valuable early information in establishing a more efficient and evidence-based patient care pathway. While the literature shows the great benefits of digital triage, it is also important to consider the limitations of implementation. Some studies do not measure clinical outcomes directly, such as cure rates, length of stay, or mortality rates. In addition, the success of implementing a digital system also depends heavily on the readiness of the infrastructure, training of medical personnel, and user acceptance. Applications designed with complex interfaces or without regular updates, as found in the study by Montano et al. (2021), can reduce the effectiveness of the system and even cause rejection of use by medical personnel and patients.

Overall, this study shows that a web-based triage system such as TRIASE GO has great potential to improve the speed and accuracy of services, both through reduced waiting times, efficient documentation, and data-driven clinical decision-making support. However, to ensure long-term impact, systematic evaluation and measurable outcomes are needed in the real context of health services in Indonesia.

CONCLUSION

The application of web-based Triage (TRIASE GO) is an appropriate implementation that can be applied in the Emergency Installation Room today, to meet patient demands for accuracy and speed of service in the Emergency Installation. TRIASE GO focuses on the

implementation of triage filling by nurses with the use of a web-based digitalization system, this has proven to be more efficient and makes it easier for nurses to perform Triage so that the speed and accuracy of patient services are easier to obtain. For health service providers such as health workers in the Emergency Installation room nurses in hospitals or health centers that have emergency installations, it is hoped that they can utilize Web-based Triage (TRIAGE GO) as the main choice in overcoming the speed and accuracy of services in the Emergency Installation room. The Web-based Triage method (TRIAGE GO) is also very practical and efficient and relatively affordable because it will minimize paper use.

REFERENCES

- Agustina Dwi Andriana, Ns. Nuril Hidayah. MS, Ns. Margono, M.Kep (2022). Analysis of Nurses' Knowledge Level Regarding the Use of Emergency Severity Index (ESI) Triage in the Emergency Installation of Temanggung Regional Hospital . e-ISSN : 2621-0584
- Aloyce, R., Leshabari, S., & Brysiewicz, P. (2014). Assessment of knowledge and skills of triage among nurses working in the emergency centers in Dar es Salaam, Tanzania. *African Journal of Emergency Medicine*, 4(1), 14–18. <https://doi.org/10.1016/j.afjem.2013.04.009>
- Andreea Vântu a, Anca Vasilescu b , * , Alexandra Baicoianu (2023). Medical emergency department triage data processing using a machine-learning solution. journal homepage: www.cell.com/heliyon
- Azhar Nawawi, Candra Mecca Sufyana, Erix Gunawan (2024). Implementation of Triage Information System for EMERGENCY INSTALLATION Outpatients at Hospital X. *Journal of Information Systems Technology and Applications* Vol. 7, No. 2, April 2024 (752-759) DOI : 10.32493/jtsi.v7i2.39539
- Evie, S., Wihastuti, T.A., & Suharsono, T. (2016). Analysis of Factors Related to the Implementation of Triage by Nurses in the Emergency Room of Type C Hospital, Malang. *Scientific Journal of Nursing Health*, 12(3), 144–153. <https://doi.org/10.26753/jikk.v12i3.163>
- Haghighi, A., Shafipour, V., Bagheri-Nesami, M., Gholipour Baradari , A ., & Yazdani, J. (2017). The impact of oral care on oral health status and prevention of ventilator-associated pneumonia in critically ill patients. *Australian Critical Care*, 30(2), 69-73. Retrieved from: <https://pubmed.ncbi.nlm.nih.gov/27499527/>
- Idzni Nelia Mustafa, Wan Nishfa Dewi, Veny Elita (2022). Triage Implementation Knowledge among Patients' Families. *Indonesian Nursing Media*, Vol 5 No 2, May 2022 DOI: 10.26714/mki.5.2.2022.110-116
- Isabel Herrera Montano, Isabel de la Torre Díez, Raúl López-Izquierdo, Miguel A. Castro Villamor, and Francisco Martín-Rodríguez (2021). Mobile screening applications: a systematic review of literature and Play Store. *J Med Syst*. 2021; 45(9): 86. Published online 2021 Aug 13. doi : 10.1007/s10916-021-01763-2
- Marta Fernandes, *, Susana M. Vieiraa, Francisca Leiteb, Carlos Palosc, Stan Finkelsteind, João MC Sousaa (2020). Clinical Decision Support Systems for Triage in the Emergency Department using Intelligent Systems: a Review. newspaper homepage : www.elsevier.com/locate/artmed

- Nawawi, A., Sufyana, CM, & Gunawan, E. (2024). Implementation of Triage Information System for EMERGENCY INSTALLATION Outpatients at Hospital X. 7(2), 752–759. <https://doi.org/10.32493/jtsi.v7i2.39539>
- Padang Kompas (2023). Death of Patient at RSUP M Djamil Allegedly Due to Slow Handling by Officers. <https://www.kompas.id/baca/nusantara/2023/11/13/pasien-kritis-di-rsup-m-djamil-died-allegedly-due-to-late-handling> -Accessed September 2024
- Regulation of the Minister of Health of the Republic of Indonesia, 2018. Regulation of the Minister of Health of the Republic of Indonesia Number 47 of 2018. https://yankes.kemkes.go.id/unduh/fileunduh_1661490033_323814.pdf -Accessed September 2024
- Raul G. Nogueira, MD*; Gisele S. Silva, MD, MPH, PhD et all (2017). The FAST-ED App: A Smartphone Platform for the Field Triage of Patients With Stroke. DOI: 10.1161/STROKEAHA.116.016026
- Rehman SA, Ali PA. (2015). A review of factors influencing patient satisfaction with nurse-led triage in the emergency department. *Int Emerg Nurs.* 2016; 29: 38–44. doi :10.1016/j.ienj.2015.11.002.
- Basic Health Research. (2018). National Riskesdas Report 2018. In Balitbangkes Publishing Institute. [https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/1/Laporan Riskesdas 2018 Nasional.pdf](https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/1/Laporan_Riskesdas_2018_Nasional.pdf)
- Tuti Herawati¹, Dhea Sofhya Gustina², Desi Sundari Utami³ (2016). Implementation of Triage by Nurses in the Emergency Installation of Lembang Regional Hospital. *Aeromedical Health Journal – Poltekkes TNI AU Ciumbuleuit Bandung.* Volume V – No. 1, March 2019
- Virgo, G. (2018). Relationship between Response Time of Emergency Installation Services (Emergency Installation) and Patient Satisfaction Level at Bangkinang Regional Hospital in 2018. *Jurnal Ners*, 2(1), 72–85. <https://doi.org/10.31004/jn.v2i1.712>
- WHO (2019). Coronary Heart Disease. World Health Organization. <http://www.who.int/news-room/fact-sheets/detail/CoronaryHeartDisease> -Accessed September 2024
- Yosep Agus Pranoto, Suryo Adi Wibowo (2020). Desktop Application of Triage System to Support Emergency Level Priority. MNEMONIC