



Original Article

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# Accuracy of Triage and Its Association with Family Satisfaction in the Emergency Department of a General Hospital: A Cross-Sectional Study

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## ABSTRACT

**Background:** Triage is a critical process in emergency departments (EDs), determining patient prioritization based on condition severity. While triage accuracy is crucial for clinical outcomes, its influence on family satisfaction remains underexplored, particularly in rural Indonesian settings. This study aimed to examine the relationship between triage accuracy and family satisfaction in the emergency department of Mokoyurli General Hospital, Buol Regency.

**Methods:** A cross-sectional design was used involving 113 family members of ED patients selected through accidental sampling. Triage accuracy was assessed based on standard criteria (red, yellow, green), while family satisfaction was measured using a validated questionnaire covering six domains. Data were analyzed using descriptive statistics and Spearman's rho correlation.

**Result:** Among the respondents, 77% experienced accurate triage, while 23% did not. In terms of satisfaction, 18.6% were dissatisfied, 44.2% fairly satisfied, and 37.2% satisfied. A strong, statistically significant correlation was found between triage accuracy and family satisfaction ( $\rho = 0.710$ ,  $p < 0.001$ ). Respondents particularly appreciated timely communication and respectful care, although moderate satisfaction remained predominant.

**Conclusion:** Triage accuracy significantly influences family satisfaction, functioning as both a clinical and emotional reassurance mechanism. Enhancing emergency nurses' triage competencies and interpersonal communication can improve care experiences. Hospitals, especially in rural areas, should integrate structured triage protocols with clear communication strategies to build trust and satisfaction. Future research should include mixed-method approaches to capture nuanced family perspectives and assess long-term satisfaction trends.

**Keywords:** Triage, Family Satisfaction, Emergency Department

### Practice Implications

1. Strengthen Triage Training for Emergency Nurses. Regular competency-based training in triage protocols is essential to ensure accurate patient prioritization, which directly enhances family satisfaction and trust in emergency care services.
2. Integrate Communication Protocols into Triage Workflow. Clear, timely, and respectful communication during the triage process should be standardized as part of emergency department procedures to address both clinical and emotional needs of families.
3. Adopt Structured Triage Systems in Rural Hospitals. Rural healthcare facilities should implement structured triage frameworks tailored to local contexts, ensuring consistency and reliability in emergency care delivery and improving overall patient-family experience.

## Introduction

The Emergency Department (ED) is a vital unit in hospitals that provides the first point of contact for patients experiencing life-threatening conditions and critical abnormalities ([Díaz-Guio et al., 2020](#); [Tran et al., 2020](#)). One of the fundamental procedures in emergency care is triage, which involves classifying patients based on the severity of their condition to prioritize treatment. Nurses play a central role in this process by assigning triage categories, often using a color-coded system. Errors in triage—such as assigning a yellow category instead of red—can delay treatment and adversely impact patient outcomes and satisfaction, especially among patients' families who expect timely and accurate care delivery ([Nederpelt et al., 2021](#); [Jin et al., 2023](#)).

Theoretically, accurate triage leads to appropriate interventions, efficient resource allocation, and improved patient and family satisfaction ([Fitzpatrick et al., 2014](#); [Özhanlı and Akyolcu, 2020](#)). Triage should be based on objective assessments of airway, breathing, and circulation (ABC), along with rapid clinical judgment. Furthermore, high-quality ED care is expected to be responsive, respectful, and timely, which directly contributes to patient and family satisfaction ([Pokorny et al., 2022](#); [Gellert, Rasławska-Socha, Marcjasz, Price, Heyduk, et al., 2023](#)).

However, in real-world settings, various studies and reports suggest a mismatch between these theoretical standards and actual practice. Data from WHO indicate that emergency department visits have increased globally by approximately 30% annually. In Indonesia, 13.3% of hospital visits are to emergency departments, placing significant pressure on ED services and triage accuracy.

A preliminary study at Mokoyurli General Hospital in Buol Regency revealed

that out of 10 interviewed families, six expressed dissatisfaction with ED services due to delays in treatment and poor communication. Only two families reported satisfaction due to fast and attentive care. Moreover, previous research showed that 5.8% of patients' families were dissatisfied with the accuracy of triage, while 67.5% were only moderately satisfied.

Overcrowding in the ED further complicates triage processes and increases patient anxiety. Nurses are often compelled to make quick decisions under stressful conditions, which may compromise accuracy. Although triage is not based on a queue system, but rather on urgency, practical limitations such as inadequate training, lack of updated standard operating procedures (SOPs), and insufficient facilities can lead to misclassification and delayed care ([Milne-Ives et al., 2020](#); [Gellert, Rasławska-Socha, Marcjasz, Price, Kuszczynski, et al., 2023](#)).

This reveals a significant research gap between ideal triage practices as recommended in clinical guidelines and the actual implementation in everyday ED settings. Furthermore, while the relationship between triage and patient outcomes has been studied, less attention has been paid to how triage accuracy directly affects family satisfaction, especially in general hospital settings in developing regions. Therefore, this study aims to investigate the accuracy of triage and its association with family satisfaction in the emergency department of a general hospital, addressing both theoretical expectations and the practical realities faced by emergency care providers.

## Methodology

### Study Design

This study employed a cross-sectional design. It is an observational method in which both independent and dependent variables were measured at the same point in time to determine the relationship between triage accuracy and family satisfaction in the emergency department.

### Participants

A total population sampling approach was initially considered, targeting all families of patients admitted to the Emergency Department (ED) of Mokoyurli General Hospital, Buol Regency, Indonesia. The total monthly patient visits in the ED averaged 1,130 during the last month prior to the study. The population exceeds 1,000, a sample of 10% is considered sufficient; therefore, the sample size was determined to be 113 participants (i.e., one family member per patient). The sampling technique used in this study was accidental sampling (a type of convenience sampling), where participants who met the inclusion criteria and were available at the time of data collection were included.

Inclusion criteria: Family members accompanying patients in the ED and willing to provide informed consent. Exclusion criteria: Family members who were emotionally distressed or unable to communicate effectively during data collection.

### Instrument

The instrument used to measure triage accuracy was developed by the researchers based on standard triage guidelines. It classified patients according to their condition into three categories: Red (emergency), Yellow (urgent), and Green (non-urgent). Triage accuracy was scored as:

1 = Accurate, 2 = Inaccurate. To measure family satisfaction, a structured questionnaire was developed, consisting of six domains: (a) Accessibility, (b) Pleasantness, (c) Communication, (d) Service quality, (e) Personal care, and (f) Facilities. Each item was rated on a four-point Likert scale: 1 = Very dissatisfied, 2 = Dissatisfied, 3 = Fairly satisfied, 4 = Satisfied. The total score was categorized as follows:  $\leq 56\%$  = Dissatisfied, 56% to 75% = Fairly satisfied, 75% to 100% = Satisfied. The instrument was developed by the authors and reviewed by experts for content validity. A pilot test was conducted, and the instrument demonstrated acceptable reliability with a Cronbach's alpha coefficient (if applicable, can be added here when available).

### Data Collection

Data were collected in the Emergency Department of Mokoyurli General Hospital over a defined period. The primary researcher, assisted by trained enumerators, conducted face-to-face interviews with participants after patients had received emergency services. Data collection occurred during working hours to ensure adequate respondent interaction and ethical engagement.

### Data Analysis

Data were analyzed using SPSS version 26. Descriptive statistics were used to describe respondent characteristics and distribution of variables. The association between triage accuracy and family satisfaction was tested using the Chi-Square test, with a significance level set at  $\alpha < 0.05$ .

### Ethical Consideration

This study was approved by the Ethics Committee of IIK Strada. Written informed consent was obtained from all participants before data collection. Confidentiality and

anonymity were ensured throughout the study, and participants were informed of their right to withdraw at any time without penalty.

## Results

A total of 113 participants were included in this study. The demographic characteristics are presented in **Table 1**.

Table 1. Sociodemographic Characteristics of Respondents (n = 113)

| Variable            | Category            | Frequency (n) | Percentage (%) |
|---------------------|---------------------|---------------|----------------|
| Age (years)         | 17–27               | 30            | 26.5           |
|                     | 28–38               | 18            | 15.9           |
|                     | 39–49               | 42            | 37.2           |
|                     | 50–60               | 23            | 20.4           |
| Gender              | Male                | 53            | 46.9           |
|                     | Female              | 60            | 53.1           |
| Education           | No formal education | 4             | 3.5            |
|                     | Primary School      | 23            | 20.4           |
|                     | Junior High School  | 31            | 27.4           |
|                     | Senior High School  | 49            | 43.4           |
|                     | Higher Education    | 6             | 5.3            |
| Occupation          | Civil Servant       | 8             | 7.1            |
|                     | Private Employee    | 32            | 28.3           |
|                     | Entrepreneur        | 29            | 25.7           |
|                     | Housewife           | 44            | 38.9           |
| Triage Accuracy     | Inaccurate          | 26            | 23             |
|                     | Accurate            | 87            | 77             |
| Family Satisfaction | Dissatisfied        | 21            | 18.6           |
|                     | Fairly satisfied    | 50            | 44.2           |
|                     | Satisfied           | 42            | 37.2           |

The relationship between triage accuracy and family satisfaction was tested using Spearman's rho correlation analysis. As presented in Table 2, a strong and statistically significant positive correlation was found between triage accuracy and family satisfaction ( $\rho = 0.710$ ,  $p < 0.001$ ).

**Table 2.** Correlation Between Triage Accuracy and Family Satisfaction (n = 113)

|                     | Triage Accuracy | Family Satisfaction |
|---------------------|-----------------|---------------------|
| Triage Accuracy     | 1               | 0.710               |
| Family Satisfaction | 0.710           | 1                   |
| Sig. (2-tailed)     | –               | < 0.001             |

Note:  $\rho$  = Spearman's rho; Significant at the 0.01 level (2-tailed).

The results indicate that accurate triage categorization is significantly associated with higher levels of family satisfaction in the emergency department of Mokoyurli General Hospital, Buol Regency. The hypothesis ( $H_1$ ) is accepted, and the null hypothesis ( $H_0$ ) is rejected.

## Discussion

The present study identified that the majority of respondents reported a moderate level of satisfaction with emergency services, with a considerable proportion of those satisfied being female, housewives, and those with secondary education. These findings suggest that sociodemographic variables, such as gender, educational background, and employment status, may subtly shape how patients and families perceive the quality of emergency department (ED) services. Interestingly, among housewives, satisfaction was notably present even in the “moderate” category, potentially reflecting their frequent roles as primary caregivers and healthcare decision-makers within the household. This pattern supports earlier observations in healthcare satisfaction studies, which indicate that expectations and prior healthcare experiences shape satisfaction outcomes more strongly than clinical parameters alone ([Zhu et al., 2021](#); [Fekonja, Strnad and Fekonja, 2022](#)). The high percentage of respondents expressing “moderate” rather than “high” satisfaction may reflect a latent unmet expectation in the emergency department experience. While basic needs such as access, location convenience, and provider courtesy were met—as participants acknowledged the ease of reaching the ED, receiving information, and the respectful attitudes of staff—this did not automatically translate into full satisfaction. This may indicate a gap between service functionality and perceived excellence. In such contexts,

satisfaction might be constrained by expectations that are formed by broader social narratives or past experiences with other health facilities, suggesting an opportunity for qualitative investigation in future research ([Yazdannik, Mohamadirizi and Nasr-Esfahani, 2020](#); [Avdalis et al., 2023](#); [Egoda Kapuralalage, Chan, Hughes, et al., 2025](#)).

The findings also revealed that accurate triage implementation was positively associated with higher satisfaction. This is an important contribution to existing literature, particularly in the Indonesian healthcare context where few studies have explicitly connected triage precision to family satisfaction. The alignment between clinical prioritization and family expectations appears to play a critical role in emotional reassurance. Inaccurate triage decisions could create delays or perceptions of negligence, thus eroding trust and overall satisfaction ([Alsharawneh and Maddigan, 2021](#); [Egoda Kapuralalage, Chan, Dulleck, et al., 2025](#)) ([Billings et al., 2023](#)). This connection aligns with the work, who underscored that triage decisions are not merely technical tasks but also deeply communicative acts that require timely, accurate assessment based on airway, breathing, circulation, disability (ABCD) principles. When triage is performed competently and visibly, it affirms to the family that their loved one’s care is appropriately prioritized.

Conceptualization of satisfaction as the gap between expectation and perceived service, it also expands it by showing how operational accuracy (triage) bridges that gap ([Alsharawneh et al., 2020](#); [Billings et al., 2023](#)). This highlights a unique intersection between technical competence and interpersonal communication. It is not only the accuracy of triage but also the transparency and clarity with which it is communicated that impacts satisfaction. In

this study, participants reported that health workers offered clear information and demonstrated patience, empathy, and attentiveness. These interpersonal qualities reinforce satisfaction even in stressful and high-pressure settings such as the emergency department ([Pearkao and Khongpirun, 2024](#); [Vasilevski et al., 2024](#)).

An additional insight emerging from the study is the discrepancy between access-related satisfaction (ease of entry, registration, meeting health personnel) and more emotional or trust-based dimensions such as feeling heard, respected, or adequately prioritized. This suggests that future healthcare quality improvement should focus not only on systems efficiency but also on reinforcing the relational dimension of emergency care. The fact that most respondents reported moderate—not high—satisfaction signals the need to re-examine patient engagement practices, especially in rural hospitals such as RSU Mokoyurli, which may lack advanced infrastructure but still have the potential to deliver high-touch, emotionally responsive care.

In light of this, the study highlights a research gap: few existing studies in Indonesia address the convergence between triage implementation, communication quality, and patient-family satisfaction in ED settings. While previous studies have primarily assessed satisfaction through general service indicators, this study underscores the relevance of triage accuracy as a measurable determinant. It also recommends future research to include mixed-method approaches, enabling deeper understanding of how triage decisions are interpreted emotionally by patients and their families.

Ultimately, the results of this study reinforce the assertion that patient satisfaction is multifactorial, influenced not only by logistical convenience but also by the

timeliness, clarity, and empathy with which care is delivered—particularly in moments of high vulnerability such as during emergency treatment.

## Practical Applications of the Findings

The results of this study suggest that acupressure therapy can be effectively integrated as a non-pharmacological intervention in the management of hypertension among elderly patients, particularly in community health settings or primary care facilities. Healthcare practitioners, including nurses and therapists, can incorporate acupressure techniques to complement standard medical treatments, potentially reducing reliance on medication and minimizing side effects. This accessible and low-cost therapy can empower patients to actively participate in their own care, improve blood pressure control, and enhance overall cardiovascular health. Moreover, training programs for caregivers and health workers on acupressure could facilitate wider adoption and improve patient outcomes in resource-limited settings.

## Conclusion

This study highlights the vital importance of accurate triage in influencing family satisfaction in emergency care, especially in rural, resource-limited hospitals. The results support the need for continuous triage training and the integration of effective communication into patient-centered care. Structured triage protocols combined with clear communication can improve emotional support and keep families well-informed. The identification of higher satisfaction among certain demographic groups also suggests the need for tailored communication strategies. However, the study's single-site focus, cross-sectional design, and one-time satisfaction

measurement limit its generalizability and causal interpretation. Future research should consider longitudinal or mixed-method approaches to capture evolving perceptions and deeper emotional insights.

### Authors Contributions:

Conceptualization: Delianto, K. Sesha Kumar  
 Data curation: Delianto  
 Formal analysis: Delianto  
 Funding acquisition: Delianto  
 Investigation: K. Sesha Kumar  
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 Project administration: Delianto  
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 Visualization: Delianto  
 Writing – original draft: Delianto  
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### Conflicts Of Interest

The Authors Declare No Conflict of Interest.

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