

Research Article

Understanding the Triage System With the Level of Anxiety of Patient Families in the Emergency Room

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Abstract. The Emergency Department (ED) is the primary entry point for patients requiring urgent medical attention, and the triage system used to classify patients by severity often becomes a source of confusion for waiting families. When families do not understand why patients are treated in a particular order rather than by arrival time, feelings of worry and distress tend to increase. This study aimed to determine the relationship between family understanding of the triage system and the level of anxiety experienced by patients' families in the Emergency Department of RSUD Dr. Moewardi Surakarta. This research applied a quantitative observational-analytic design with a cross sectional approach. Ninety respondents were recruited through purposive sampling based on inclusion criteria. Data were collected using a validated triage-understanding questionnaire and the Hamilton Anxiety Rating Scale (HARS), then analyzed using the Spearman Rank correlation test. The results showed that most respondents had insufficient understanding of the triage system (62.2%) and experienced severe anxiety (42.2%). The correlation test produced a p-value of <0.001 ($p < 0.05$) with a correlation coefficient of 0.504, indicating a moderate, positive, and statistically significant relationship: the lower the family's understanding of triage, the higher their anxiety level, and vice versa. These findings suggest that structured therapeutic communication and triage education for waiting families could be an effective strategy to reduce anxiety in the emergency setting.

Keywords: Anxiety; Emergency Department; Family; Triage System; Understanding.

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1. Background

The Emergency Department (ER) is a hospital service unit that serves as the first line of care for patients with life-threatening conditions, where every second of treatment is crucial for the patient's chances of survival from further disability. World Health Organization data shows a trend of ER visits continuing to soar year after year, from approximately 18,250,250 in 2019 to 31,241,031 in 2021, or an increase from 13.1% to 21.1% of all hospital visits (WHO, 2026). A similar pattern is also seen in Indonesia; the Ministry of Health recorded an increase in the proportion of ER visits from 15.5% in 2020 to 28.2% in 2022, and Indonesia is even listed as the ASEAN country with the highest number of ER visits, including in Central Java, which reached nearly two million visits in 2018 (Ministry of Health, 2022).

A similar picture emerged at Dr. Moewardi Regional Hospital in Surakarta. A preliminary study conducted by researchers recorded 8,602 emergency department visits between November 2025 and January 2026, with a peak in December 2025 (34.1%). The five most common diagnoses found included dyspepsia, unspecific fever, unspecific cardiac arrest, and foreign bodies in the ear and nose, a figure that demonstrates the large number of cases that emergency department staff must sort through each day. The high prevalence of these visits makes a triage system absolutely necessary to ensure targeted treatment. Triage is essentially an effort to group patients based on their level of urgency, not based on who arrived first. Various triage models such as the Australian Triage Scale (ATS), the Manchester Triage Scale (MTS), the Canadian Triage and Acuity Scale (CTAS), the Emergency Severity Index (ESI), and the Simple Triage and Rapid Treatment (START) have evolved to meet the needs and nursing ethics of each country. To date, Indonesia does not yet have a uniform triage standard across all hospitals (Patimah & Siti, 2022). Dr. Moewardi Hospital, Surakarta, as a type A referral hospital in Central Java, implements the

Singapore Patient Acuity Category Scale (*PACS*) system, which classifies patients using color codes so that medical personnel can prioritize treatment quickly and appropriately (Humas, 2021). The problem is, this system designed to expedite care is often misunderstood by patients' families. Research by Adeliyani et al., (2025), found that families' misunderstanding of triage procedures was a major trigger for high levels of anxiety, with the majority of respondents (65.3%) having insufficient triage knowledge. Many families believe that services should follow the order of arrival, when in fact the principle of triage is the opposite, namely prioritizing patients with the most life-threatening conditions or based on the patient's level of emergency. Research by Talibo, (2023), noted that this kind of misunderstanding has triggered complaints, threats, and even acts of violence against emergency room staff because families feel that treatment is being slow, when in fact it stems from a lack of understanding of the triage system itself. This lack of understanding by families regarding triage triggers an emotional response, namely anxiety.

Anxiety itself is a psychological condition associated with fear, worry, and anxiety, often accompanied by physical complaints. This condition is very common among families waiting for patients in the emergency room, with triggers ranging from the patient's condition, safety concerns, to anxiety about the cost of treatment (Solikhin et al., 2025). Research by Arnika (2020) shows that the lighter the patient's triage category, the better the family's psychological condition. This is supported by research by Solikhin et al. (2025), who found that severe anxiety was more prevalent in families of yellow triage patients than green triage patients. In line with the variety of emergency cases found at Dr. Moewardi Surakarta Regional General Hospital and the evidence that understanding triage is closely related to family anxiety, this study was conducted to further examine whether family understanding of the triage system is truly related to the level of family anxiety while accompanying patients in the emergency room.

2. Theoretical Study

The Emergency Department (ER) is a hospital service unit that functions to receive, sort, stabilize, and provide acute care to patients with emergency conditions 24 hours a day, seven days a week (Rohman et al., 2024). Because the characteristics of incoming patients are heterogeneous, ranging from age, gender, education level, to employment status, ER staff are required to have a quick response and the ability to understand the patient's background so that treatment remains on target (Ida Rosidawati & Ariyani, 2020). The principle of saving life and limb is the main reference, where the faster the response to an emergency incident, the greater the chance of patient safety (Kusnantto & Barkah, 2021). The term triage comes from the French word, *trier*, meaning to sort, a concept that originated on the battlefield to determine which soldiers needed to be treated first. In the context of the modern emergency department (ER), triage is used to identify patients in need of immediate attention while preventing overcrowding by prioritizing treatment based on severity, not order of arrival (Elsi & Rahman, 2024; Saepudin et al., 2023). Triage divides patients' medical needs into three levels of urgency: emergency, urgent, and non-urgent, each requiring a different speed of systematic assessment and examination (Ambali et al., 2025).

A family's understanding of the triage system is an important variable because it directly influences how they interpret the services they receive. Families who understand the logic of triage tend to feel satisfied because they understand the applicable standard procedures, while ignorance can actually trigger conflict due to feelings of being ignored (Sukrang, Hasnidar, 2023; Panjaitan et al., 2024). This understanding is influenced by several factors, including age, which is related to maturity of thinking, education level, which influences the rationality of responses to information, and minimal exposure to information because triage education is usually only provided once when a patient is first examined in the emergency room. (Triwijayanti et al., 2023). Clinically, triage priorities are generally divided into four classifications: life-threatening emergencies (P1) requiring immediate action, non-emergencies (P2) requiring life-threatening but can still await follow-up by a specialist, non-emergencies (P3) requiring immediate treatment, and non-emergencies (P4) with mild symptoms (Putri Lubis et al., 2024). This classification is then represented through a color code, red for the highest priority, yellow for potential life-threatening in the short term, green for normal treatment, and black for patients with a very small chance of survival. Dr. Moewardi Surakarta Regional General Hospital itself adopts a PACS model that divides patients into four priority scales P1 to P4, with different waiting times ranging from seconds to several hours (Lateef, 2024).

On the other hand, anxiety is defined as an unpleasant feeling that arises due to internal or external tension, which is controlled by the autonomic nervous system, causing physical symptoms such as a pounding heart and sweaty palms (Ardyansyah & A, 2024). Family anxiety in the emergency room specifically stems from the patient's condition, the severity of the disease, and the lack of information received (Mariati et al., 2022), which can then manifest in the form of restlessness, pacing, or repeated questions to the staff (Norfita Ashari et al., 2025). The Hamilton Anxiety Rating Scale (HARS) measuring tool is widely used to assess the severity of these symptoms because it has been proven valid and reliable and is easy for respondents to understand even in stressful situations (Utami et al., 2025). Based on this review, the conceptual framework of this study places the understanding of the triage system as the independent variable and the level of anxiety of the patient's family as the dependent variable. Previous studies, such as Lasman et al., (2023) and Solikhin et al., (2025), consistently show a relationship between triage categories and understanding of triage with the level of family anxiety in the emergency room. Therefore, this study hypothesis concludes that the better the family's understanding of the triage system, the lower the level of anxiety they feel.

3. Research Methods

This study uses a quantitative approach with an observational analytical design, with a cross-sectional approach. The study population was all families who accompanied patients in the Emergency Room of Dr. Moewardi Surakarta Regional Hospital, with an estimated population of 1,397 visitors based on January 2026 visit data. Determination of the number of samples using the Isaac and Michael formula with a 10% error rate, which resulted in a figure of 89.85 and rounded up to 90 respondents. Sampling was carried out using a purposive sampling technique based on inclusion criteria, namely nuclear families (parents, husband/wife, or children) aged 25 to 64 years who were willing to fill out the questionnaire after agreeing to the informed consent form, as well as exclusion criteria for families who were not nuclear families, were experiencing severe psychological disorders, refused to participate, or were unable to complete the questionnaire completely.

The independent variable in this study was the understanding of the triage system, while the dependent variable was the level of anxiety of the patient's family. Triage understanding was measured using a triage understanding questionnaire, which consists of 14 true-false statements with a total score of 0 to 14, and is categorized as good (>75%), sufficient (56-75%), and poor (<56%). This instrument has been tested for validity, with 14 of the initial 15 statements declared valid, and reliable with a Cronbach's Alpha value above 0.6. Anxiety levels were measured using the Hamilton Anxiety Rating Scale (HARS), which consists of 14 questions with a score range of 0-4 for each item.

4. Results And Discussion

Research result

This research was conducted in the emergency room of Dr. Moewardi Regional Hospital, Surakarta. This type A hospital owned by the Central Java Provincial Government is located at Jl. Kolonel Sutarto No. 132, Jebres, Surakarta City. This hospital has more than 900 beds, 24-hour emergency room services, an intensive care unit (ICU), and advanced supporting facilities such as a 1.5T MRI and a 64-slice CT scan. It has been fully accredited. Based on 2021 data, emergency patient visits reached 24,021 people, an increase of 2.89% compared to the previous year, with 1,085 of them dying either before or after receiving treatment. The study subjects were 90 patient families who met the inclusion criteria during the data collection period. A general overview of the respondents' characteristics is presented in Table 1 below.

Table 1. Characteristics of Patient Family Respondents in the Emergency Room of Dr. Moewardi Surakarta Regional Hospital (n=90).

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	22	24.4
	Female	68	75.6
Age	22–44 years	67	74.4
	45–65 years	23	25.6
Education	No formal education	1	1.1
	Elementary school	5	5.6

Variable	Category	Frequency (n)	Percentage (%)
Occupation	Junior high school	18	20.0
	Senior high school/Vocational school	46	51.1
	College/University	20	22.2
	Civil servant	7	7.8
	Teacher/Lecturer	2	2.2
	Self-employed	34	37.8
	Farmer	8	8.9
	Laborer	12	13.3
	Housewife	26	28.9
	Student	1	1.1
Triage Category	Red	36	40.0
	Yellow	53	58.9
	Green	1	1.1
	Black	0	0.0
Triage Handling Time	< 30 minutes	69	76.7
	30–60 minutes	12	13.3
	> 60 minutes	9	10.0

Source: Primary data (2026).

Table 1 shows that the respondents in this study were predominantly female (75.6 %), with the majority being in the productive age group (74.4%) between 22 and 44 years. In terms of education, high school/vocational school graduates were the most common (51.1 %), while in terms of occupation, self-employed individuals were the dominant group (37.8%). Clinically, the majority of patients assisted were in the yellow triage category (58.9 %), and the majority of patients received treatment in less than 30 minutes (76.7%). Furthermore, the results of the univariate analysis of the main research variables, namely the level of understanding of the triage system and the level of family anxiety, are presented in Table 2 and Table 3.

Table 2. Distribution of Level of Understanding of the Patient Family Triage System (n=90).

Understanding Category	Frequency (n)	Percentage (%)
Good	18	20.0
Enough	16	17.8
Not enough	56	62.2

Source: Primary data (2026).

Table 2 shows that the majority of patient families, namely 56 respondents (62.2%), had a poor understanding of the triage system, while only 18 respondents (20.0%) were in the good understanding category and 16 respondents (17.8%) were in the sufficient category.

Table 3. Distribution of Anxiety Levels of Patient Families in the Emergency Room (n=90).

Anxiety Category	Frequency (n)	Percentage (%)
No Worries	11	12.2
Mild Anxiety	10	11.1
Moderate Anxiety	12	13.3
Severe Anxiety	38	42.2
Very Worried	19	21.1

Source: Primary data (2026).

Table 3 shows that severe anxiety was the most common category, experienced by 38 respondents (42.2 %), followed by very severe anxiety by 19 respondents (21.1%). Only 11 respondents (12.2 %) showed no signs of anxiety at all, indicating that overall, the majority of families of patients waiting in the emergency room were experiencing severe to extremely severe anxiety. Bivariate analysis was conducted to assess the relationship between understanding of the triage system and family anxiety levels, as presented in Table 4.

Table 4. Cross-tabulation of understanding of the triage system with the level of family anxiety in the emergency room of Dr. Moewardi Surakarta Regional Hospital (n=90).

Understanding Triage	No Worries	Light	Currently	Heavy	Very heavy
Not enough	0	0	0	38	19
Enough	0	10	12	0	0
Good	11	0	0	0	0

p-value = <0.001; correlation coefficient (r) = 0.504 Source: Primary data (2026)

The Spearman Rank correlation test yielded a significance value of <0.001 ($p < 0.05$), indicating a relationship between understanding the triage system and the level of anxiety of patient families in the emergency room. The correlation coefficient value of 0.504 indicates a moderate relationship with a positive direction, thus rejecting H_0 and accepting H_a . In other words, the lower the family's understanding of the triage system, the higher their anxiety, and conversely, the better their understanding of triage, the lower their anxiety.

Respondent Characteristics

Gender

Table 5. Distribution of Respondents by Gender.

Gender	Frequency (n)	Percentage (%)
Man	22	24.4
Woman	68	75.6
Total	90	100

Source: Primary data (2026).

The majority of respondents in this study were female, namely 68 people or 75.6 % of the total sample. This finding is in line with research by Amalia et al. (2023) which explains that women tend to be more susceptible to anxiety because they are more sensitive and open in expressing their feelings and concerns, in contrast to men who generally think more logically and tend to suppress what they feel. Firdausy et al. (2025) added that hormonal differences, especially the role of estrogen in regulating emotions through the serotonin pathway and GABA receptors, also influence why women are more susceptible to anxiety than men. From a psychological perspective, women also more often use emotion-based coping strategies when facing stress, making them more easily affected by stressful situations such as those in the emergency room. Sumboko et al. (2024) strengthen this view by stating that women rely more on feelings while men rely more on logic in responding to stressful situations.

Age

Table 6. Distribution of Respondents by Age.

Age Group	Frequency (n)	Percentage (%)
22 - 44 years	67	74.4
45 - 65 years	23	25.6
Total	90	100

Source: Primary data (2026).

Most respondents were in the young adult to middle age range, namely 22-44 years, as many as 67 people (74.4 %). Anwar et al. (2024) explained that age is one of the internal characteristics that influence anxiety, where younger individuals tend to experience higher anxiety than older individuals, because increasing age is usually accompanied by increased life experience so that a person becomes more skilled in solving problems. This is supported by Gumilang et al. (2022) who found that age maturity also influences a person's coping mechanisms, where the more mature age group (above 46 years) has better adaptability so that it rarely experiences excessive anxiety compared to the age group that is not yet fully mature. Thus, the dominance of respondents aged 22-44 years in this study also explains why the anxiety levels found are quite high.

Education

Table 7. Distribution of Respondents Based on Education Level.

Level of education	Frequency (n)	Percentage (%)
No school	1	1.1
Elementary School	5	5.6
JUNIOR HIGH SCHOOL	18	20.0
High School/Vocational School	46	51.1

Level of education	Frequency (n)	Percentage (%)
College	20	22.2
Total	90	100

Source: Primary data (2026).

The most common level of education among respondents was high school/vocational high school (SMA/SMK), representing 46 respondents (51.1 %). Suyani (2020) found a relationship between education level and anxiety, with respondents with secondary education being more prone to anxiety than those with higher education, as higher levels of knowledge contribute to a greater ability to manage anxiety. Hafiduddin and Zahira (2025) obtained similar findings, with the majority of respondents having a high school/equivalent education (57.1 %). Education plays a crucial role in shaping a person's ability to recognize, understand, and adapt to stressors; through the educational process, a person not only gains new knowledge but also hones the thinking and awareness needed to deal with stress more effectively, including the stress that arises when assisting family members in the emergency room.

Job

Table 8. Distribution of Respondents Based on Type of Work.

Type of work	Frequency (n)	Percentage (%)
civil servant	7	7.8
Teacher/Lecturer	2	2.2
Self-employed	34	37.8
Farmer	8	8.9
Laborer	12	13.3
Housewife	26	28.9
Student	1	1.1
Total	90	100

Source: Primary data (2026).

In terms of employment, the self-employed group was the largest with 34 respondents (37.8 %), followed by housewives with 26 respondents (28.9%). Interestingly, this finding differs slightly from a number of previous studies which actually showed that anxiety was more common in the unemployed group, as they were more burdened with worries regarding medical costs, hospitalization costs, and follow-up care costs at home (Hastuti, 2024). Abdullah et al. (2025) emphasized that financial burden is indeed one of the main triggers of anxiety related to treatment costs, while income uncertainty during the patient's caregiving period also aggravates the family's psychological condition. In line with this, Dinda et al. (2022) found that individuals without permanent jobs tend to be more anxious due to greater life pressures, while employed individuals generally have activities that help distract from the anxiety they experience.

Triage Category

Table 9. Distribution of respondents based on triage Category of accompanied patients.

Triage Category	Frequency (n)	Percentage (%)
Red	36	40.0
Yellow	53	58.9
Green	1	1.1
Black	0	0
Total	90	100

Source: Primary data (2026).

The yellow triage category was the most common category found in patients accompanied by respondents, namely 53 people (58.9 %). Solikhin et al. (2025) explained that the triage category held by the patient greatly influences the level of anxiety of their family, and in the yellow category anxiety is more triggered by a lack of understanding of the triage system and uncertainty regarding the treatment process that the patient will undergo. This finding is also in line with Fisabili et al. (2025), who showed that yellow triage patients tend to have quite high levels of family anxiety, related to the patient's medical condition, experiences during the ER, and the length of the wait before receiving definitive treatment. The better the patient's triage condition, the better the psychological condition of the family, so the role of nurses in providing holistic care is important so that families can still make decisions about treatment with a cool head.

Triage Handling Time**Table 10.** Distribution of Respondents Based on Triage Handling Time.

Handling Time	Frequency (n)	Percentage (%)
< 30 minutes	69	76.7
30 - 60 minutes	12	13.3
> 60 minutes	9	10.0
Total	90	100

Source: Primary data (2026).

The majority of patients received treatment in less than 30 minutes, representing 69 respondents (76.7%), indicating that the service response at the Emergency Department of Dr. Moewardi Hospital, Surakarta, is actually quite fast. However, this objective speed does not always align with family perceptions, as families waiting for patients in conditions threatening disability or death still desire instant treatment, so that a time span that is actually considered reasonable can still be perceived as long and cause anxiety (Faozi et al., 2024). Response time itself is an important indicator of the success of emergency treatment, as the speed of first aid is the main key to preventing death or further disability (Hamid et al., 2023). Therefore, even though the waiting time is technically short, clear communication from staff is still needed to ensure that family perceptions of the speed of service align with the reality on the ground.

Level of Understanding of the Family Triage System

The results of the study showed that most families, namely 56 respondents (62.2%), had a poor understanding of the triage system, while only 18 respondents (20.0%) were in the good category and 16 respondents (17.8%) were in the sufficient category. This finding is in line with Panjaitan et al. (2024) who stated that a lack of family understanding of triage procedures can trigger conflict due to feelings of being ignored and not receiving certainty of action, and cause dissatisfaction because many families still believe that emergency room services should follow the order of arrival, not the patient's level of emergency.

Afrina Januarista et al. (2024) added that low triage understanding is fundamentally rooted in several factors, such as a lack of information regarding patient admission procedures, a lack of explanation from nurses about the importance of triage and the psychosocial support that should be provided, and a lack of information preparation for emergency situations. When education from healthcare workers is suboptimal, family understanding also suffers, ultimately contributing to increased anxiety during the waiting period in the emergency room.

Anxiety Level of Patient Families in the Emergency Room

Severe anxiety was the most prevalent level in this study, experienced by 38 respondents (42.2%), followed by very severe anxiety in 19 respondents (21.1%), moderate anxiety in 12 respondents (13.3%), no anxiety in 11 respondents (12.2%), and mild anxiety in 10 respondents (11.1%). Thus, the majority of families waiting for patients in the emergency room were experiencing severe to very severe anxiety. The high number of visits to the emergency room (ER) generally helps explain why family anxiety tends to be high, as families who witness patients in emergency conditions often feel threatened by the possibility of death or disability (Abdullah et al., 2025). Ma'sum (2025) found that patient triage is closely related to family psychological conditions, where families with patients in the yellow and red triage categories tend to experience higher anxiety than families with patients in the green category. When family anxiety is not handled properly, the impact can spread to the patient themselves, making them even more anxious and potentially worsening their clinical condition, considering that the family is the main support system in the healing process.

The Relationship Between Understanding the Triage System and the Level of Anxiety of Patient Families

The Spearman Rank correlation test results showed a significance value of <0.001 ($p < 0.05$) with a correlation coefficient of 0.504, indicating a positive relationship with moderate strength between the understanding of the triage system and the level of anxiety of patient families in the emergency room. This means that the lower the family's understanding of the triage system, the higher their anxiety, and conversely, the better their understanding, the less anxiety they experience. Afrina Januarista et al. (2024) explained that triage categories often foster fear and anxiety among waiting families, especially when they assume that those who arrive first should be served first. This lack of understanding of triage logic then gives rise to feelings of dissatisfaction, anger, fatigue, and even the habit of pacing back and forth and asking staff repeatedly. Adeliyani et al. (2025) also noted that

almost all respondents in their study (95.9%) experienced severe anxiety, in line with Huzaifah et al. (2022) who found a similar proportion of 70.1% in a study with the same theme.

However, not all studies find identical patterns. Manitu and Topake (2024), for example, found that the majority of families in their study actually had good triage knowledge (62.1 %), more than those with poor knowledge (37.9%), suggesting that differences in hospital context and the intensity of education provided likely contributed to the variation in results between studies. Muhfi et al. (2026) added an important nuance: that families with mild to moderate anxiety may actually have sufficient knowledge about triage, but this rational knowledge apparently does not necessarily eliminate the emotional uncertainty, fear of loss, or stress of the stressful ER environment. In other words, cognitive understanding of triage is important, but it is not sufficient to reduce anxiety without consistent therapeutic communication from healthcare professionals. The implication is that therapeutic communication that explains the patient's condition and the rationale for triage is key to bridging the gap between rational knowledge and the emotional distress experienced by families. The better the communication between nurses and families, the greater the chance of building mutual trust, which in turn helps families make care decisions more calmly and reduces their anxiety levels (Afrina Januarista et al., 2024). This study has several limitations that should be noted for future research. The questionnaire filling process took place under stressful circumstances, resulting in some respondents completing the instrument while suppressing anxiety or even monitoring the patient's condition without the presence of other family members. These conditions could potentially affect respondents' concentration levels when answering questions, so the results should be interpreted in light of this situational context.

5. Conclusion

This study concluded that most families of patients in the Emergency Room of Dr. Moewardi Surakarta Regional Hospital had a poor understanding of the triage system (62.2 %) and experienced severe anxiety (42.2%) while waiting for patient treatment. The Spearman Rank correlation test proved a statistically significant relationship between the understanding of the triage system and the level of family anxiety, with a significance value of <0.001 and a correlation coefficient of 0.504 indicating a moderate strength of the relationship and a positive direction. The lower the family's understanding of the triage system, the higher the anxiety they felt, and vice versa.

These findings underscore the importance of communication-based and educational interventions for families of patients in the emergency department. Families are advised to be more proactive in seeking information and asking healthcare professionals directly about the triage system in place to better understand the basis for prioritizing the services they receive. Future researchers are advised to further explore factors beyond triage knowledge that contribute to the level of anxiety among families in the emergency department, such as the social support received by the family, prior experience in emergency situations, and the condition of the emergency department environment itself. Exploring these factors is expected to enrich our understanding of the dynamics of family anxiety more comprehensively and complement the findings obtained in this study.

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