



The Relationship Between Emergency Department Waiting Time and Patient Satisfaction at Toto Kabila Regional General Hospital, Bone Bolango Regency

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ABSTRACT

Background: Waiting time is an important operational indicator in emergency department (ED) services, but patient satisfaction may also depend on communication, perceived competence, empathy, and the physical environment. This study examined the relationship between ED waiting time and five dimensions of service quality at Toto Kabila Regional General Hospital, Bone Bolango Regency, Indonesia. Methods: A quantitative analytical-correlational study with a cross-sectional design was conducted among 188 respondents recruited through accidental sampling during a 10-day data-collection period in June 2026. Waiting time was recorded using an observation sheet, while satisfaction was assessed with a structured five-point Likert questionnaire based on the SERVQUAL/RATER dimensions: tangibles, reliability, responsiveness, empathy, and assurance. Spearman's rank correlation was used for bivariate analysis. Results: Mean total waiting time was 71.11 minutes (range 27–313 minutes); most respondents (163/188) classified waiting time as moderate (30–120 minutes). Satisfaction ratings were predominantly positive across dimensions. Spearman correlations between waiting time and tangibles ($r=0.065$, $p=0.377$), reliability ($r=0.061$, $p=0.405$), responsiveness ($r=0.059$, $p=0.420$), empathy ($r=0.112$, $p=0.125$), and assurance ($r=0.103$, $p=0.158$) were weak and not statistically significant. Conclusion: In this sample, waiting time was not significantly associated with satisfaction scores across the five SERVQUAL dimensions. This finding does not mean that delays are clinically unimportant; it indicates that satisfaction ratings may reflect multiple aspects of care and that further research should account for triage acuity, clinical condition, and the stages included in waiting-time measurement. The hospital should continue improving patient flow while maintaining clear communication and empathetic care.

INTRODUCTION

Emergency departments (EDs) provide time-sensitive assessment and treatment for patients with acute illness or injury. Their performance is shaped by the balance between patient arrivals, clinical urgency, staffing, diagnostic capacity, and the availability of inpatient beds. When demand exceeds capacity, congestion may delay assessment, investigations, specialist consultation, and transfer to definitive care. Research on emergency care has therefore treated waiting time and length of stay as important measures of service processes, while recognizing that they represent different stages of a patient's journey (Aziz et al., 2023; Yogantara & Sinulingga, 2025).

Waiting time can influence how patients and families experience care. However, satisfaction is not a simple reflection of elapsed minutes. Patients may also evaluate whether staff explain delays, respond to questions, provide reassurance, maintain privacy, and appear competent. The SERVQUAL framework organizes perceived service quality into five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. These dimensions

provide a useful structure for assessing service experience in healthcare, including emergency settings (Parasuraman et al., 1988; Rinduan et al., 2025; Susno & Putri, 2025).

Triage is central to emergency department flow because clinical urgency, rather than arrival order alone, determines priority. The Australian Triage Scale (ATS) classifies patients into five urgency categories, each associated with a target time to assessment. Appropriate triage helps direct limited resources to those at greatest risk, although implementation and patient-flow challenges can still contribute to delays (Harti & Pujiastuti, 2023; Rahmawati et al., 2025). Indonesian emergency services are also governed by Minister of Health Regulation No. 47 of 2018 on emergency services (Ministry of Health of the Republic of Indonesia, 2018).

At Toto Kabila Regional General Hospital in Bone Bolango Regency, preliminary observations described delays related to patient volume, limited bed availability, and disruptions to the administrative network. The source study also reported an earlier satisfaction survey result of 91% for ED services, while noting continuing operational concerns. These circumstances make it important to examine whether observed waiting time is statistically associated with patient satisfaction in the local context rather than assuming that the relationship must be strong. Previous studies cited in the source document have reported mixed findings. Some found statistically significant associations between waiting or response time and satisfaction, while other work has focused on process improvement and overall service quality (Atmojo et al., 2024; Khairunnisa et al., 2023; Manyering et al., 2023; Rasyid et al., 2025; Wisageni et al., 2023). Differences in triage groups, service settings, definitions of waiting time, and measurement instruments may partly explain variation across findings. This study therefore assessed the relationship between ED waiting time and each of the five SERVQUAL dimensions at Toto Kabila Regional General Hospital.

Conceptual Background

Waiting time and emergency department flow

In this study, total waiting time was operationalized as the time associated with the patient's ED service process, including registration, triage, observation, and physician consultation. The source document describes overcrowding, staff availability, registration, diagnostic tests, consultation, and transfer to inpatient units as potential contributors to delay. Process mapping and quality-improvement approaches can help identify bottlenecks across these steps (Dewi, 2021; Ditasya et al., 2025; Rasyid et al., 2025).

Patient satisfaction and SERVQUAL

Patient satisfaction reflects a patient's appraisal of care in relation to expectations and experience. In the SERVQUAL/RATER model, tangibles refer to facilities and staff appearance; reliability to consistent and dependable service; responsiveness to willingness and promptness in helping; assurance to knowledge, courtesy, and the ability to inspire trust; and empathy to individualized attention. These dimensions are related but distinct, and a patient may rate staff interactions positively even when the overall process takes longer than expected (Parasuraman et al., 1988; Tanjung et al., 2023; Rinduan et al., 2025).

Triage and clinical priority

Emergency triage prioritizes patients according to clinical urgency, not merely their arrival sequence. The source document describes ATS categories from immediate resuscitation (ATS 1) through non-urgent presentations (ATS 5). As a result, a longer wait for a stable, lower-acuity patient does not necessarily indicate that a more urgent patient has been inappropriately delayed. Nevertheless, transparent explanations of triage and regular reassessment are important for patient understanding and safety (Harti & Pujiastuti, 2023; Rahmawati et al., 2025).

METHODS

Study design and setting

This study used a quantitative, analytical-correlational approach with a cross-sectional design. It was conducted in the emergency department of Toto Kabila Regional General Hospital, Bone Bolango Regency, Gorontalo Province, Indonesia. Data collection took place over 10 days in June 2026.

Population and sample

The source study recruited 188 respondents using accidental (convenience) sampling. Eligible participants were stable ED patients who had completed direct registration, or patient/family respondents who were able to provide

satisfaction responses as described in the study materials. The sample size was reported as calculated using Slovin's formula from a population estimate of 355 with a 5% error margin. Because convenience sampling was used, the sample should not be assumed to represent every ED patient or all acuity categories.

Measures and data collection

Waiting time was recorded using an observation sheet that captured the service process. The reported total waiting time ranged from arrival through relevant stages of ED care. Patient satisfaction was measured using a structured questionnaire with a five-point response scale from very dissatisfied to very satisfied. The questionnaire contained 25 statements grouped into tangibles, reliability, responsiveness, empathy, and assurance. Secondary information from hospital records was used to describe the study setting.

Statistical analysis

Descriptive statistics summarized respondent characteristics, waiting time, and satisfaction ratings. Spearman's rank correlation was used to test the association between waiting time and each SERVQUAL dimension. Statistical significance was assessed at $p < 0.05$. Correlation coefficients are interpreted as measures of direction and strength of association, not as evidence that waiting time causes a particular satisfaction rating.

Ethical and reporting considerations

The source document reports that permission and research completion documentation were obtained from the hospital. It does not provide enough detail in the sections reviewed to identify a formal ethics committee approval number; therefore, no approval number is asserted here. Patient information should be kept confidential, and findings should be interpreted in light of the study's single-site, short-period, convenience-sample design.

RESULTS

Respondent characteristics

A total of 188 respondents were included. The largest age group was 18–27 years (49 respondents; 26%), followed by 28–37 years (42; 22%). Women accounted for 114 respondents (61%) and men for 74 (39%). The most frequently reported occupation was homemaker (57; 30%), followed by self-employment (34; 18%) and student status (29; 15%).

Waiting time

Mean total waiting time was 71.11 minutes, with a minimum of 27 minutes and a maximum of 313 minutes. Most respondents were in the moderate waiting-time category of 30–120 minutes (163; 86.7%). Six respondents (3.2%) were categorized as waiting 30 minutes or less, while 19 (10.1%) were categorized as waiting more than 120 minutes. The longest reported wait was approximately 5 hours and 13 minutes.

Waiting-time category	Respondents (n)	Percentage
≤30 minutes	6	3.2%
30–120 minutes	163	86.7%
>120 minutes	19	10.1%
Total	188	100%

Satisfaction ratings

Ratings were predominantly positive across all five SERVQUAL dimensions. For tangibles, 79% reported being satisfied and 12% very satisfied. For reliability, 71% were satisfied and 27% very satisfied. Responsiveness was rated satisfied by 78% and very satisfied by 15%. Empathy was rated satisfied by 74% and very satisfied by 23%. Assurance was rated satisfied by 73% and very satisfied by 25%. Small discrepancies between category percentages and totals may reflect rounding in the source tables.

SERVQUAL dimension	Satisfied	Very satisfied	Source-reported interpretation
Tangibles	79%	12%	Generally positive
Reliability	71%	27%	Generally positive
Responsiveness	78%	15%	Generally positive
Empathy	74%	23%	Generally positive
Assurance	73%	25%	Generally positive

Correlation analysis

None of the five correlations between waiting time and satisfaction dimensions reached statistical significance (all p -values > 0.05). The coefficients were weak and positive, ranging from 0.059 to 0.112.

Dimension	Spearman reported)	r (as p-value	Interpretation at $\alpha=0.05$	
Tangibles	0.065	0.377	Not significant	statistically
Reliability	0.061	0.405	Not significant	statistically
Responsiveness	0.059	0.420	Not significant	statistically
Empathy	0.112	0.125	Not significant	statistically
Assurance	0.103	0.158	Not significant	statistically

Note: The original report describes Spearman rank correlation but labels the coefficients as “r.” They are reproduced here as reported; in a final journal submission, the notation should be standardized to Spearman’s rho (ρ) after checking the statistical output.

DISCUSSION

The central finding is that waiting time was not significantly associated with any of the five satisfaction dimensions in this sample. This differs from some studies summarized in the source document, including work reporting significant relationships between waiting time and satisfaction among emergency patients (Atmojo et al., 2024; Khairunnisa et al., 2023) and studies of response time and satisfaction (Fadila et al., 2024; Wisageni et al., 2023). It is not necessarily a contradiction: studies may measure different time intervals, include different triage categories, or assess satisfaction in different service contexts.

The mean waiting time of 71.11 minutes and the maximum of 313 minutes demonstrate meaningful variation in patients’ experiences. Most respondents nevertheless rated satisfaction positively. A plausible interpretation is that satisfaction reflected several features of the encounter, including staff behavior and confidence in care, in addition to elapsed time. This interpretation is consistent with the multidimensional structure of SERVQUAL and with studies assessing quality through several dimensions rather than a single operational metric (Parasuraman et al., 1988; Rinduan et al., 2025; Susno & Putri, 2025). However, the cross-sectional design cannot establish which factors caused satisfaction ratings.

The correlation for tangibles was very weak (ρ as reported = 0.065, $p = 0.377$). Physical facilities, cleanliness, and staff appearance may be evaluated separately from how long a patient waits. The result should not be interpreted as evidence that physical resources are unimportant; rather, this dataset did not show a statistically significant monotonic relationship between waiting time and ratings of tangible aspects. Hospital quality assessments have similarly treated the physical environment as one component of overall patient experience (Tanjung et al., 2023). Reliability also showed a very weak, non-significant association ($\rho = 0.061$, $p = 0.405$). Patients may distinguish the consistency and accuracy of care from the time spent waiting before a clinician attends to them. Clear explanations, consistent procedures, and dependable clinical actions remain important quality targets even when the statistical association with waiting time is weak. Research on healthcare service quality emphasizes that patient experience involves both process performance and interpersonal care (Manyering et al., 2023; Susno & Putri, 2025). Responsiveness had a very weak, non-significant correlation ($\rho = 0.059$, $p = 0.420$). This may reflect a difference between total waiting time and the perceived responsiveness of staff once contact occurs. Patients can wait before assessment but still report that staff answer questions or provide help promptly during direct interactions. At the same time, the questionnaire includes an item about not being left waiting for a long time, so future studies should examine whether the waiting-time and responsiveness measures overlap conceptually. Measurement overlap or differences in the definition of waiting time can influence observed associations.

Empathy showed the largest coefficient among the five dimensions, but the relationship remained weak and non-significant ($\rho = 0.112$, $p = 0.125$). A considerate manner, listening, and understandable communication may make a stressful ED visit feel more supportive. This should be viewed as a practical hypothesis rather than proof that empathy offsets delays. Staff should not use compassionate communication as a substitute for timely care; rather,

communication and process improvement should proceed together.

Assurance was also weakly and non-significantly associated with waiting time ($p = 0.103$, $p = 0.158$). The high satisfaction ratings suggest that many respondents felt confidence in staff competence and professionalism. In an emergency setting, explanations of triage priorities, privacy protection, and clear information about next steps can help build trust. Such practices are consistent with the assurance dimension of SERVQUAL and with recommendations to maintain professionalism and transparent communication in the source study.

Operationally, the findings support a balanced approach. The hospital should continue monitoring the time from arrival to triage, first clinical assessment, diagnostic completion, decision to admit or discharge, and actual transfer. Breaking total time into stages would help identify whether delays arise from registration, triage, staffing, diagnostics, consultation, bed availability, or information-system interruptions. Process improvement methods such as value-stream mapping and Six Sigma have been discussed in the source literature as ways to identify waste and improve ED flow (Ditasya et al., 2025; Rasyid et al., 2025).

Interpretation must account for important limitations. The study took place at one hospital over 10 days and used accidental sampling. The source describes the included group as stable patients who had completed registration, so findings may not represent critically ill patients, patients who left before assessment, or all triage levels. Satisfaction data were self-reported and may be influenced by expectations, stress, family members' responses, and the clinical outcome. A larger multicenter study with stratification by triage acuity and diagnosis would provide stronger evidence. Future analysis could also adjust for age, prior hospital experience, service stage, staffing, crowding, and whether respondents were patients or accompanying family members.

CONCLUSION

Among 188 respondents at Toto Kabila Regional General Hospital, mean ED waiting time was 71.11 minutes (range 27–313 minutes), and the majority of respondents reported moderate waiting time. Satisfaction ratings were predominantly positive across tangibles, reliability, responsiveness, empathy, and assurance. Spearman correlation tests showed no statistically significant association between waiting time and any of the five SERVQUAL dimensions (p values 0.125–0.420). These results indicate that, within this sample, waiting time alone did not explain variation in the five satisfaction ratings. They do not establish that delays are harmless or that waiting-time reduction is unnecessary.

RECOMMENDATIONS

Hospital management should review the patient journey by measuring each stage separately and strengthening triage, patient-flow coordination, bed management, and continuity of administrative systems.

ED personnel should provide timely, clear, and compassionate updates about triage priority, expected next steps, and reasons for delays, while protecting patient privacy and maintaining professional standards.

Future studies should recruit larger and more representative samples, include several hospitals and triage categories, define waiting-time start and end points precisely, and consider multivariable analysis of potential confounders.

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