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A Study of the Quality of Nursing Services in Emergency Units Based on the SERVQUAL Model and Its Impact on Patient Satisfaction

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ABSTRACT

This qualitative embedded single-case study examined how emergency department (ED) nursing service quality, framed by the SERVQUAL model, influences patient satisfaction. The study was conducted in the ED of a tertiary referral hospital in an urban setting, chosen because high patient turnover and recurring crowding make service-quality trade-offs explicit. Sixteen informants were recruited purposively with maximum variation (six ED nurses, two nursing/quality managers, six adult patients, and two family companions) to capture diverse care trajectories and roles; recruitment stopped at thematic saturation. Data were collected through semi-structured interviews, non-participant observations, and review of relevant service documents, and analyzed using iterative thematic analysis combining inductive coding with SERVQUAL-guided categorization. Findings indicate that responsiveness and assurance were the strongest drivers of satisfaction, while tangibles amplified first impressions and dignity, reliability shaped perceptions during handovers and delays, and empathy operated through brief but meaningful micro-behaviors. Recommendations include communication-based responsiveness routines, standardized triage and discharge explanations, privacy-preserving practices, and workflow supports that sustain compassionate care under crowding. Future studies should triangulate these themes with operational metrics and test dimension-prioritized interventions across multiple ED settings.

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INTRODUCTION

Emergency departments (EDs) operate at the front line of health systems, providing rapid, high-stakes care for patients with urgent and time-sensitive conditions. In this setting, nursing services represent the most continuous point of contact for patients and families, spanning triage, monitoring, clinical interventions, patient education, and emotional support (Zhu et al., 2024). Because patients often experience pain, fear, uncertainty, and perceived loss of control during emergency visits, the quality of nursing interactions can shape not only clinical safety but also the patient's overall appraisal of care. Consequently, evaluating nursing service quality in the ED is increasingly recognized as a strategic priority for hospital quality assurance, patient-centered care initiatives, and reputational competitiveness (Riman et al., 2023) .

Patient satisfaction has become a widely used indicator of healthcare quality, reflecting patients' perceptions of whether services meet their needs, expectations, and values. In ED environments, satisfaction is influenced by clinical outcomes, communication quality, responsiveness, empathy, waiting time management, perceived fairness of triage, privacy, and the clarity of information about procedures and next steps. While satisfaction is not a direct proxy for technical clinical quality, it is strongly tied to service experience and can affect important downstream behaviors such as adherence to treatment recommendations, willingness to return, trust in providers, and word-of-mouth recommendations. For hospitals, dissatisfaction may translate into reputational risk, complaints, and reduced patient loyalty (Jackson, 2024). For health professionals, persistent dissatisfaction signals system-level issues such as staffing mismatch, workflow inefficiencies, communication breakdowns, and resource constraints that can ultimately compromise safety and staff well-being (Nogues & Tremblay, 2024).

One established approach to measuring service quality from the user's perspective is the SERVQUAL model, which conceptualizes quality as a function of the gap between expectations and perceived

performance. SERVQUAL commonly operationalizes service quality through five dimensions: tangibles (physical environment and visible resources), reliability (consistency and accuracy of service delivery), responsiveness (timeliness and willingness to help), assurance (competence, courtesy, and trust), and empathy (caring, individualized attention). In healthcare, SERVQUAL has been applied to diverse contexts such as outpatient clinics, inpatient wards, and diagnostic services, offering a structured lens to identify where service delivery falls short of what patients anticipate (Duhalde et al., 2025). However, the ED context has unique characteristics unpredictable caseload, overcrowding, rapid triage decisions, frequent interruptions, and high emotional intensity that may alter how patients interpret service quality dimensions, particularly regarding responsiveness and empathy during stressful encounters. This underscores the need for ED-specific assessments that reflect the real conditions under which nursing services are delivered.

Despite the growing body of service quality research, several limitations persist in current evidence. First, many studies treat service quality as a general hospital construct without isolating nursing-specific contributions, even though nursing care often constitutes the most sustained patient interaction and is central to perceived compassion and coordination. Second, investigations that use SERVQUAL frequently focus on overall satisfaction without identifying which dimensions most strongly drive satisfaction in emergency settings, where expectations may differ from elective or routine care contexts. Third, findings across settings are not always consistent; for example, some studies indicate responsiveness and assurance as dominant predictors of satisfaction, while others emphasize empathy or environmental factors, suggesting that contextual elements such as patient acuity, wait time transparency, staffing ratios, and institutional culture may influence results. Fourth, there is limited synthesis on how SERVQUAL performs in ED nursing services when adapted to local language, cultural norms, and operational realities, raising concerns about measurement validity and comparability across studies (Seabrooke et al., 2025).

These gaps point to a central research problem: hospitals need actionable, dimension-specific evidence on how the quality of ED nursing services captured through a robust, patient-centered framework shapes patient satisfaction, and which aspects of quality offer the highest leverage for improvement. Without this evidence, quality improvement initiatives may default to generic interventions that do not address the most influential drivers of patient experience in emergency care (Kennedy et al., 2025). Additionally, ED nursing managers require diagnostic tools that do more than describe satisfaction levels; they must illuminate why patients feel satisfied or dissatisfied and how the service process can be optimized without compromising clinical priorities.

This study is positioned to advance the state of the art by applying the SERVQUAL model specifically to nursing services in the ED and empirically testing its impact on patient satisfaction. The novelty lies in its focused integration of a well-established service quality framework with the operational complexity of emergency nursing care, enabling a granular understanding of how each SERVQUAL dimension contributes to satisfaction in acute-care interactions. Rather than treating service quality as a monolithic concept, the study aims to identify dimension-level priorities that can be translated into targeted interventions, such as improving communication during triage, strengthening patient reassurance through clear explanations, optimizing response workflows, or enhancing the physical environment to support privacy and comfort. By mapping perceived quality to satisfaction outcomes, the research is expected to yield evidence that is both theoretically meaningful and operationally implementable for ED leadership (Zhao, 2024).

Accordingly, the study is guided by the following research questions: How do patients perceive the quality of nursing services in the ED when assessed using the SERVQUAL dimensions? To what extent does perceived nursing service quality influence patient satisfaction in the ED? Which SERVQUAL dimensions most strongly predict patient satisfaction, and are there dimensions that show weaker or non-significant effects under emergency conditions? These questions translate into the core objective of the research: to measure ED nursing service quality using the SERVQUAL model and to analyze its effect on patient satisfaction, with particular emphasis on identifying the most influential dimensions for improvement planning.

The anticipated contributions of this study span theoretical, academic, and practical domains. Theoretically, the research strengthens the application of service quality theory in high-acuity healthcare by clarifying how SERVQUAL dimensions function in emergency nursing contexts, where expectations and perceptions may be shaped by urgency, stress, and uncertainty. Academically, the study provides an evidence-based reference for scholars examining patient experience, nursing management, and service quality measurement, and it can inform future instrument refinement, methodological approaches (e.g., multivariate modeling), and comparative studies across units or institutions. Practically, the findings can guide ED nurse managers and hospital quality teams in prioritizing improvement strategies based on the dimensions most associated with satisfaction (Jeong & Moon, 2024). For example, if responsiveness and assurance emerge as dominant predictors, initiatives may focus on workflow redesign, triage communication protocols, and competency-based interpersonal training; if empathy plays a larger role, interventions may emphasize therapeutic communication and patient-centered interaction standards even under time pressure. In addition, the results can support continuous quality monitoring, staff development planning, and patient feedback systems aligned with measurable service quality indicators (Alshalawi et al., 2025).

Several limitations should be acknowledged as inherent to this line of inquiry. Patient satisfaction and perceived quality are subjective constructs that may be influenced by individual expectations, prior experiences, health literacy, cultural norms, and the immediate clinical outcome of the ED visit. Cross-sectional measurement may limit causal inference, as perceptions and satisfaction are captured at a single point in time and may not reflect evolving judgments after discharge. The use of self-reported survey instruments introduces potential response bias, including social desirability or recall effects, especially if patients complete questionnaires while still experiencing discomfort or fatigue. Furthermore, ED variability such as fluctuating crowding levels, staffing patterns, and case mix may affect generalizability across time periods and institutions.

Future research should extend this work by incorporating longitudinal designs that capture satisfaction after discharge, triangulating survey findings with objective operational metrics (e.g., wait times, nurse-to-patient ratios, triage duration), and exploring mediating or moderating mechanisms, such as whether communication clarity mediates the relationship between responsiveness and satisfaction, or whether patient acuity moderates the role of empathy. Multi-center studies would strengthen external validity and allow benchmarking across hospitals (Chang & Manojlovich, 2023). Qualitative exploration could also deepen interpretation by revealing why certain dimensions matter most to patients in emergency circumstances, thereby enriching quantitative findings with context-sensitive insights. Collectively, such research would support the development of more resilient, patient-centered emergency nursing services and provide a stronger empirical foundation for service quality improvements that align clinical urgency with humane, respectful care.

LITERATURE REVIEW

The literature on emergency care quality consistently emphasizes that the emergency department (ED) is a service environment where clinical urgency and patient experience collide: care must be safe and rapid, yet also understandable, reassuring, and respectful. Within this environment, nursing services are uniquely positioned to shape patient perceptions because nurses typically lead triage interactions, coordinate bedside monitoring and symptom management, communicate updates, and provide emotional support to patients and families. When ED crowding, unpredictable caseload, and time pressure intensify, the “experience of care” becomes highly sensitive to communication clarity, perceived responsiveness, and the sense that clinicians remain attentive despite constraints. This makes nursing service quality not only a managerial concern but also a theoretically rich domain for explaining patient satisfaction outcomes in acute settings (Schnabolk & Scaglione, 2025).

A central strand of scholarship frames service quality as the patient’s cognitive and affective evaluation of how well a service encounter matches what they believe should occur. In ED nursing, this evaluation is rarely limited to technical competence; it often includes interpersonal dynamics such as courtesy, empathy, and trust, and operational dynamics such as timeliness, coordination, privacy, and the adequacy of the physical environment (Iddrisu et al., 2025). Research on ED satisfaction frequently

identifies multiple drivers waiting time communication, staff attitudes, perceived fairness in triage, environmental comfort, and the comprehensibility of information suggesting that satisfaction emerges from a bundle of micro-experiences rather than a single clinical event. For example, studies assessing ED satisfaction highlight that patient priorities include not just "what was done" but "how it felt" and "how understandable the process was," reinforcing the need for frameworks that can capture both functional and relational aspects of nursing services in time-critical contexts.

To address this complexity, the first theoretical anchor for this study is the SERVQUAL service quality model, popularized by A. A. Parasuraman, Valarie A. Valarie A. Zeithaml, and Leonard L. Leonard L. Berry in 1985, when they were affiliated with Texas A&M University. SERVQUAL conceptualizes service quality as a gap between expectations and perceived performance, operationalized through dimensions that represent how service users judge the encounter. In the canonical formulation, the dimensions include tangibles (physical evidence and appearance of facilities/equipment), reliability (consistent and accurate performance), responsiveness (willingness to help and provide prompt service), assurance (knowledge, courtesy, and ability to inspire trust), and empathy (caring and individualized attention). In ED nursing, these dimensions translate into concrete touchpoints: triage explanations and reassurance (assurance), speed of response to calls and pain needs (responsiveness), consistency of monitoring and medication processes (reliability), privacy and cleanliness of bays and equipment readiness (tangibles), and the felt sense of being treated as a person rather than a case (empathy) (You, 2024).

Conceptually, SERVQUAL offers a diagnostic mechanism rather than merely a descriptive one: it helps locate which aspects of the nursing service encounter are most misaligned with patient expectations (Seck et al., 2025). The framework is particularly useful in the ED because expectations can be unusually heterogeneous patients arriving by ambulance may prioritize speed and clinical competence, while lower-acuity patients may prioritize communication, fairness, and comfort. Under SERVQUAL logic, two patients can receive similar clinical actions yet leave with different quality judgments because their expectations (and thus their perceived "gap") differ. This provides a defensible rationale for evaluating not only overall service quality but also dimension-level patterns that can guide improvement prioritization in ED nursing management.

At the same time, SERVQUAL has evolved through scholarly debate and methodological refinement. A key development was the critique that expectation measures may be unstable or conceptually ambiguous in certain contexts, motivating performance-only alternatives such as SERVPERF, introduced by J. Joseph Cronin Jr. and Steven A. Taylor in 1992. Subsequent reviews have further examined SERVQUAL's dimensionality and portability across settings, reinforcing the need for careful contextual adaptation and validation rather than direct "copy-paste" use (Cui & Wang, 2025). For ED nursing, these developments imply that researchers should treat SERVQUAL as a structured lens that may require wording adjustments, cultural calibration, and psychometric reassessment to ensure that dimension items truly capture emergency-care realities (e.g., the meaning of "promptness" under triage constraints).

The second theoretical anchor focuses on satisfaction formation, using Expectation Disconfirmation Theory (EDT), popularized by Richard L. Oliver in 1980 at the Graduate School of Business Administration, Washington University in St. Louis. EDT explains satisfaction as an outcome of the comparison between pre-service expectations and perceived performance, producing "disconfirmation" that can be positive (performance exceeds expectations), neutral, or negative (performance falls short). In ED nursing encounters, EDT is highly relevant because the same objective waiting time or clinical pathway can be interpreted differently depending on what the patient expected on arrival and what information they receive during care. For instance, if a patient expects immediate attention but receives little explanation for triage delays, negative disconfirmation may occur even if clinical priorities were appropriate. Conversely, transparent communication and compassionate engagement can recalibrate expectations and reduce negative disconfirmation, supporting satisfaction even amid unavoidable delays (Hajizadeh et al., 2025).

EDT has also shown adaptability in contemporary healthcare contexts, including technology-mediated services, where patients judge whether the service process and outcomes meet expectations

about convenience, clarity, safety, and trust. This modern extension is instructive for ED nursing because emergency care increasingly incorporates digital documentation, queue systems, clinical decision support, and standardized pathways; nevertheless, the patient still evaluates the "human" experience of care. EDT therefore complements SERVQUAL by clarifying why service-quality perceptions translate into satisfaction: the SERVQUAL dimensions can be understood as the concrete service attributes that drive performance perceptions, while EDT explains how those perceptions interact with expectations to produce satisfaction judgments (Ramdani, 2025).

The third theoretical anchor is the Structure–Process–Outcome model (often called the Donabedian model), introduced by Avedis Donabedian in 1966 and widely associated with his work as a public health professor at the University of Michigan. Donabedian's framework proposes that healthcare quality can be assessed through structures (the setting, resources, staffing, infrastructure), processes (what is done in care delivery, including technical and interpersonal actions), and outcomes (the effects of care, including patient-reported outcomes such as satisfaction) (Alazaka, 2024). In ED nursing, this triad is particularly powerful because it situates patient satisfaction within a system: satisfaction is not only a reflection of individual nurse behavior (process) but also the environment that enables or constrains that behavior (structure), such as nurse-to-patient ratios, availability of beds, triage layout, privacy features, and availability of essential supplies.

Contemporary quality strategy literature continues to use Donabedian's triad as a foundational logic for measurement and improvement, often integrating it with broader governance and monitoring systems. For ED nursing research, this means patient satisfaction should not be interpreted as a standalone "score," but as an outcome signal that can be traced back to modifiable structures and processes. For example, if SERVQUAL responsiveness is weak, Donabedian encourages asking whether the root cause lies in structural constraints (crowding, staffing, workflow design) that degrade process performance, rather than attributing deficits solely to individual staff effort (Kiviniitty et al., 2023).

Together, these three theories provide a coherent conceptual architecture for the study titled "Studi Kualitas Layanan Keperawatan pada Unit Gawat Darurat Berbasis Model SERVQUAL dan Dampaknya terhadap Kepuasan Pasien." SERVQUAL offers a multidimensional map of how patients perceive nursing service quality, EDT explains the psychological mechanism by which these perceptions produce satisfaction through expectation–performance comparisons, and Donabedian frames satisfaction as an outcome that is systematically shaped by structures and processes in ED care delivery. The theoretical triangulation is especially useful for addressing the main research problem: ED nursing services are often evaluated through broad satisfaction indicators without sufficient granularity about which aspects of service quality matter most, why they matter, and how they link to improvable system conditions (Choi & Kim, 2024).

This integrated lens directly speaks to the research gap motivating the study. First, the ED context challenges the transferability of generic service quality conclusions because triage logic and clinical urgency can make "timeliness" and "fairness" uniquely salient; SERVQUAL must therefore be interpreted through emergency-specific operational realities and validated accordingly. Second, many satisfaction studies identify factors associated with satisfaction but do not explicitly connect them to a theory-based causal pathway; combining SERVQUAL with EDT clarifies how dimension-level quality perceptions become satisfaction judgments via disconfirmation. Third, service quality improvements can fail when they focus only on frontline behavior and ignore enabling structures; Donabedian ensures the study's findings can be translated into both behavioral (process) and managerial (structure) interventions (Tremblay et al., 2026).

Within this framework, the novelty of the proposed research can be articulated as theory-driven prioritization: rather than merely reporting that "service quality correlates with satisfaction," the study aims to determine which SERVQUAL dimensions of ED nursing service quality most strongly predict patient satisfaction and how these findings can be interpreted as expectation–performance disconfirmation signals within a structure–process–outcome system. This positions the research to generate actionable recommendations, such as strengthening assurance through standardized communication scripts during triage and transitions, improving responsiveness via workflow redesign and escalation pathways,

and improving tangibles and privacy through layout adjustments each mapped to Donabedian structures/processes and linked to satisfaction outcomes (Kim et al., 2023).

In conclusion, the literature supports the argument that patient satisfaction in ED care is a multidimensional outcome shaped by both interpersonal nursing interactions and system constraints. SERVQUAL, as advanced by Parasuraman, Zeithaml, and Berry, provides a structured measurement approach for capturing perceived nursing service quality across key dimensions, while acknowledging methodological debates and modern refinements such as performance-only approaches and contextual validation needs (Giffels & McCaulley, 2024). Expectation Disconfirmation Theory, articulated by Richard L. Oliver, explains the formation of satisfaction as a function of expectation–performance comparison, offering a mechanism for interpreting why improvements in responsiveness, empathy, and assurance can yield disproportionate gains in satisfaction, especially when expectations are managed through clear communication. Donabedian's structure–process–outcome model anchors these insights within the ED system, clarifying how staffing, infrastructure, and workflow shape nursing processes and patient-reported outcomes such as satisfaction, thereby strengthening the translational value of research results for quality improvement. By synthesizing these theories, the present study is theoretically positioned to address the main problem, close the identified gap, and deliver a coherent explanation of how SERVQUAL-based nursing service quality in the ED affects patient satisfaction while producing evidence aligned with the study's research questions, objectives, and theoretical, academic, and practical benefits (Iddrisu et al., 2025).

RESEARCH METHODS

This study employed a qualitative approach to generate an in-depth understanding of how nursing service quality in the emergency department (ED) is experienced, interpreted, and enacted by key stakeholders, and how these experiences are perceived to influence patient satisfaction. A qualitative design was selected because service quality and satisfaction are not only measurable outcomes but also socially constructed judgments shaped by expectations, communication, emotions, time pressure, perceived fairness of triage, and the interpersonal climate of care (Jadhav, 2025). In the ED, where encounters are intense and often brief, qualitative inquiry allows the study to capture nuances that standardized surveys may overlook, including how patients define "responsiveness," how nurses manage competing demands, and how organizational conditions affect the delivery of care attributes consistent with the SERVQUAL dimensions. The qualitative orientation is therefore aligned with the study title, "Study of Nursing Service Quality in the Emergency Department Based on the SERVQUAL Model and Its Impact on Patient Satisfaction," by focusing on meaning, context, and explanatory depth rather than solely quantification (Benjamin, 2025).

The research design adopted was an embedded single-case study of an ED nursing service system. A case study design is appropriate when the phenomenon under investigation is bounded by a real-world setting and cannot be meaningfully separated from contextual conditions such as crowding, triage policies, staffing patterns, patient flow, and the physical environment. The "case" in this research was defined as the nursing service experience in one hospital ED, and it was "embedded" because it included multiple participant groups and data sources to represent different perspectives within the same service system (Obaidi et al., 2025). This design supports analytic explanation by comparing convergent and divergent perceptions across patients, family companions, nurses, physicians, and managers while maintaining a coherent focus on ED nursing service quality and satisfaction. The SERVQUAL model was used as a sensitizing framework to guide exploration of tangibles, reliability, responsiveness, assurance, and empathy in nursing services, without forcing participant narratives into rigid categories; rather, it provided a structured lens for interpreting how service quality is manifested in routine and high-pressure ED situations.

The study was conducted at a tertiary referral hospital ED in an urban area, selected purposively to maximize information richness. The location was chosen because it manages a high volume and case mix, operates a formal triage system, and experiences recurrent crowding pressures conditions that intensify the practical challenges of sustaining responsiveness, empathy, and assurance while maintaining reliable clinical processes (Alhedrity et al., 2025). A tertiary ED also typically includes complex interprofessional coordination, making it suitable for examining how nursing service quality emerges from

both individual interactions and system-level factors such as workflow design and resource availability. The selection rationale was further supported by feasibility and access considerations: the hospital leadership provided administrative permission for observations, staff interviews, and document review, enabling triangulation of data sources needed for a rigorous qualitative case study (Tyagi & Sharma, 2024).

Participants were recruited using purposive sampling with maximum variation to ensure the study captured diverse experiences relevant to ED nursing service quality and satisfaction. Maximum variation criteria were applied to patients and family companions (e.g., varying acuity levels as clinically appropriate, different waiting time experiences, and different arrival modes such as walk-in vs. ambulance, where feasible) and to staff (e.g., varying years of ED experience, shift patterns, and clinical roles) (Tyransky et al., 2025). Recruitment proceeded iteratively, and sampling continued until informational saturation was reached, defined as the point where additional interviews and observations no longer produced substantively new insights about SERVQUAL-related dimensions or their perceived links to satisfaction. Inclusion criteria for patients included adults who were clinically stable at the time of invitation, able to provide informed consent, and willing to discuss their ED experience without interfering with care. Exclusion criteria included critical instability, severe cognitive impairment, or conditions where participation could compromise safety or comfort. For staff participants, inclusion criteria included current assignment to the ED and direct involvement in patient care or service management (Michalski et al., 2025).

The primary informants included ED nurses, ED nurse managers, and patients (and, when appropriate, family companions), as they represent both the delivery and reception of nursing services. To protect confidentiality, all participants were assigned pseudonyms. For nursing staff, the study included “Nurse Maya” (triage nurse, 7 years ED experience), “Nurse Rafi” (resuscitation bay nurse, 10 years), “Nurse Sinta” (fast-track nurse, 4 years), and “Nurse Arman” (charge nurse, 12 years). These nurses were selected because they represent key service points where SERVQUAL dimensions are most visible: triage (responsiveness and assurance), resuscitation and high-acuity care (reliability and assurance under pressure), fast-track processes (responsiveness and perceived fairness), and shift coordination (system reliability and staffing-related constraints). The managerial perspective was represented by “Ms. Laila” (ED Nurse Manager) and “Mr. Dion” (Quality Improvement Officer), selected for their responsibility in policy implementation, staffing decisions, and service monitoring. Patient perspectives were gathered from individuals with varying service trajectories, including “Mr. Andi” (adult patient, treated and discharged), “Ms. Rina” (adult patient, required extended observation), “Mr. Bima” (adult patient accompanied by family), and “Ms. Kara” (adult patient with prior ED visits). Patients were selected to capture differences in expectations and comparative judgments that often shape satisfaction. Family companions such as “Mrs. Wati” (family caregiver) were included when they played a central role in communication, decision-making, or witnessing nursing interactions, because companion perceptions frequently influence overall satisfaction appraisals in emergency care.

Data collection used method triangulation to strengthen credibility and to allow cross-validation of findings. The primary method was semi-structured, in-depth interviews. Interview guides were informed by SERVQUAL dimensions and focused on participants’ concrete experiences, critical incidents, and perceived drivers of satisfaction or dissatisfaction. For patients and companions, prompts explored how they interpreted timeliness, clarity of information, trust in nurses, interpersonal sensitivity, and perceptions of the environment and privacy (Linda et al., 2024). For nurses and managers, prompts examined how they operationalize service quality under constraints, how they manage competing priorities, what supports or hinders responsiveness and empathy, and how they interpret patient satisfaction feedback. Interviews were conducted in a quiet area near the ED or another agreed location, with duration adapted to participant comfort and clinical workflow, typically ranging from 30 to 60 minutes. All interviews were audio-recorded with consent and transcribed verbatim (O’Driscoll, 2024).

Non-participant observations were conducted to capture real-time service processes and environmental factors that influence perceived quality. Observations focused on triage interactions, nurse call responsiveness, communication during waiting periods, pain management responsiveness, bedside explanations, and visible cues of professionalism and empathy. The researcher used an observation

protocol aligned with the SERVQUAL lens while remaining open to emergent themes, such as how crowding affects privacy or how staff manage emotional labor. Field notes documented interaction patterns, contextual constraints (e.g., bed availability), and moments of reassurance or frustration. In addition, document review was undertaken for relevant service materials such as ED patient information leaflets, triage signage, complaint logs or satisfaction summaries (where accessible), and standard operating procedures related to nursing communication, triage, and patient flow. These documents provided institutional context and supported triangulation between stated policies and observed practice.

Data analysis followed a thematic analysis approach using an iterative, inductive–deductive logic. Transcripts and field notes were read repeatedly to build familiarity, then coded line-by-line to identify meaning units related to service quality experiences and satisfaction judgments. Codes were developed inductively from participant narratives (e.g., "explaining delays reduces anxiety," "privacy compromised in overcrowding") and also deductively mapped to SERVQUAL dimensions when appropriate (e.g., "responsiveness to pain calls," "assurance through confident explanations"). Codes were then grouped into candidate themes reflecting patterns across participant groups, such as "responsiveness as communication, not only speed," "assurance built through transparency," and "reliability threatened by system bottlenecks." Theme refinement involved checking internal coherence, comparing across patients and staff, and ensuring themes were grounded in multiple data sources. Analytic memos were used to document evolving interpretations and to make the inferential steps explicit. The final thematic structure emphasized how specific service quality attributes were perceived to shape satisfaction, including mechanisms such as expectation adjustment, trust formation, emotional comfort, and perceived fairness (Kleib et al., 2024).

The technique for drawing conclusions was based on a rigorous, staged process of qualitative inference. First, conclusions were derived through constant comparison across interviews, observations, and documents, identifying where evidence converged and where it diverged by participant group or service point. Second, the study used triangulation to confirm that key claims about service quality and satisfaction were supported by more than one source type (e.g., patients' accounts of delayed information matched observation notes and workflow descriptions from nurses). Third, member checking was conducted selectively with a subset of participants (e.g., one nurse and two patients) by sharing a brief summary of preliminary themes to confirm accuracy and resonance without pressuring participants to endorse interpretations (Eghbali et al., 2024). Fourth, negative case analysis was used by actively searching for experiences that contradicted dominant patterns (e.g., instances where patients reported high satisfaction despite long waits) to refine explanations and avoid overgeneralization. Finally, the study developed an analytic narrative linking themes to the SERVQUAL framework, clarifying which dimensions appeared most influential in satisfaction and under what contextual conditions, thereby supporting transferable insights for ED nursing quality improvement (Villalobos et al., 2024).

To ensure trustworthiness, the study applied established qualitative quality criteria. Credibility was supported through triangulation, prolonged engagement in the field across multiple shifts, and member checking. Dependability was strengthened through an audit trail documenting sampling decisions, interview guide evolution, coding definitions, and theme development steps. Confirmability was enhanced through reflexive journaling to identify researcher assumptions and mitigate bias, along with peer debriefing with an experienced qualitative researcher to challenge interpretations. Transferability was supported by thick description of the ED context, participant characteristics, and service processes, enabling readers to judge relevance to similar settings. Ethical approval was obtained from the appropriate institutional review body. Participants provided informed consent, were assured of confidentiality and the right to withdraw, and interviews were scheduled to avoid interfering with clinical care. All identifiable information was removed from transcripts, and pseudonyms were used consistently (Thwala & Nhlabatsi, 2025).

This methodology is designed to produce an empirically grounded explanation of how ED nursing service quality interpreted through the SERVQUAL lens shapes patient satisfaction, while respecting the complexity of emergency care delivery. By combining multiple informant perspectives with

observations and document review, and by applying systematic thematic analysis with robust trustworthiness strategies, the study aims to yield credible, actionable insights for nursing management and service improvement in high-pressure ED environments.

RESULTS AND DISCUSSION

The findings address the study's main problem: emergency department (ED) nursing services are frequently evaluated using broad satisfaction indicators that do not explain which aspects of nursing service quality most shape patient satisfaction, nor how contextual constraints in the ED influence these perceptions. Using the SERVQUAL lens as an analytic framework and triangulating interviews, observations, and document review, the results show that patient satisfaction was not driven by a single factor (e.g., speed alone), but by an interrelated pattern across responsiveness, assurance, tangibles, reliability, and empathy. Across participant groups, satisfaction judgments formed through comparisons between what patients expected on arrival and what they experienced during the care process, consistent with Expectation Disconfirmation Theory (EDT). Simultaneously, the results demonstrate that perceived service quality was shaped by structural conditions (crowding, staffing, layout, resource availability) that influenced nursing processes (communication, monitoring, response behaviors, and coordination), culminating in patient-reported outcomes such as satisfaction, in line with Donabedian's structure–process–outcome logic (Khan et al., 2025).

In relation to the first research question on how patients perceive ED nursing service quality using SERVQUAL dimensions, the dominant theme was that responsiveness was interpreted as "timely attention plus visible commitment," not merely rapid physical presence. Patients repeatedly framed responsiveness as the sense that nurses acknowledged them, monitored changes, returned when promised, and communicated what would happen next (Raun et al., 2025). When waiting was unavoidable due to triage priorities, dissatisfaction was less about elapsed time than about silence, uncertainty, and perceived neglect. This pattern indicates that responsiveness in ED nursing is partly communicative: nurses who explained delays, checked in briefly, or provided updates were perceived as more responsive even when the queue remained long. This aligns with broader evidence that ED patient experience is strongly driven by communication and wait-related perceptions rather than objective waiting time alone. From an EDT perspective, such communication functions as expectation management: it recalibrates what patients think is reasonable and reduces negative disconfirmation (Mohamed et al., 2024).

Assurance emerged as a second central dimension shaping satisfaction and was closely intertwined with responsiveness. Patients described assurance as confidence in nurses' competence and calmness, conveyed through clear triage explanations, professional demeanor, and consistent information. When nurses explained the rationale for triage categorization, medication timing, monitoring plans, or discharge instructions in understandable terms, patients reported reduced anxiety and greater trust, even amid crowding. Conversely, inconsistent messages between staff members such as different estimates of waiting time or unclear responsibility for follow-up undermined assurance and led patients to interpret the service as disorganized (Hutami et al., 2025). These findings mirror prior literature indicating that information provision and meeting patient expectations are key predictors of ED satisfaction, with perceived waiting and expectation alignment often exerting strong influence. In Donabedian terms, assurance is a process attribute that can be strengthened through standardized communication routines and role clarity, but is also vulnerable to structural stressors such as high workload and frequent interruptions (Huang et al., 2025).

Tangibles were more influential than participants initially expected, especially in shaping first impressions and perceived dignity. Patients frequently evaluated nursing service quality through environmental cues that they associated with professionalism and safety: cleanliness, availability of seating, privacy in treatment spaces, signage clarity, and the apparent readiness of equipment. When the environment looked crowded, noisy, or lacked privacy barriers, patients often interpreted care as less respectful and less safe, even if clinical actions were adequate. This is consistent with evidence showing that tangible aspects can substantially contribute to satisfaction in emergency settings, sometimes showing stronger associations than interpersonal dimensions depending on context. Importantly, the study's observations suggest that tangibles in ED nursing are not purely "facility issues"; they can become nursing-visible through how nurses negotiate privacy (lowering voices, using curtains when available),

maintain order in the immediate care area, and orient patients to the space (Munkejord & Tingvold, 2022).

Reliability understood as consistent, accurate, and dependable care processes was most salient when patients experienced handovers, diagnostic delays, or repeated requests for the same information. Patients interpreted repeated questioning without explanation as a sign of poor coordination, while nurses described it as a safety process linked to verification (Sangsrijan et al., 2024). The gap between these interpretations is a key reliability challenge: safety-driven repetition can be perceived as inefficiency unless staff explicitly frame it as deliberate verification. Reliability deficits were also observed when pain management appeared delayed or when laboratory and radiology bottlenecks extended length of stay. Here, the Donabedian framework clarified how structural constraints (bed shortages, diagnostic turnaround time, staff-to-patient ratios) shaped process reliability and influenced satisfaction outcomes. The results also echo prior ED research in which perceived timeliness, information delivery, and coordination influence satisfaction more than isolated clinical tasks(Amritzer et al., 2024).

Empathy was consistently described as "micro-behaviors" rather than lengthy conversations. Patients highlighted small but meaningful actions: calling patients by name, acknowledging discomfort, providing reassurance during procedures, maintaining respectful tone under stress, and involving family companions appropriately. While empathy was not always cited as the primary determinant of satisfaction when patients prioritized urgent symptom relief, it became decisive when patients felt vulnerable, in pain, or confused by ED processes. This supports the broader literature identifying staff empathy as a common driver of ED experience, especially in emotionally charged encounters. Nurses described empathy as a form of emotional labor that becomes harder to sustain under crowding and repeated conflict, suggesting that empathy is both an individual competence and a system-dependent capacity. In EDT terms, empathetic behavior often produced positive disconfirmation by exceeding expectations in a stressful setting, thereby elevating satisfaction disproportionately relative to the time invested.

Regarding the second research question about the extent to which perceived nursing service quality influences patient satisfaction, the findings indicate a strong perceived linkage, but with a pathway that is mediated by expectation alignment and trust formation. Patients rarely separated "nursing service quality" from "overall ED satisfaction"; instead, nursing behaviors were treated as the most visible representation of the ED's care ethos. When responsiveness and assurance were strong, patients tended to interpret delays or inconveniences as unavoidable system realities rather than personal neglect, which protected satisfaction. When responsiveness and assurance were weak, even minor delays were interpreted as disrespect, lowering satisfaction (Han & Han, 2023). This pattern is congruent with quantitative and review evidence that meeting expectations and perceived triage waiting are significant predictors of satisfaction and that service quality dimensions tangibles, assurance, reliability, responsiveness, and empathy are commonly implicated in satisfaction judgments. The qualitative contribution here is the explanation of "how" and "why" this relationship operates in practice: satisfaction emerges from a continuous interpretation of cues across the ED journey, with nursing communication acting as a stabilizing mechanism under uncertainty (Al-khadher, 2024).

For the third research question on which SERVQUAL dimensions most strongly predict satisfaction in this context, the pattern across narratives suggests that responsiveness and assurance functioned as the primary drivers, with tangibles serving as a powerful contextual amplifier and empathy acting as a trust-enhancing differentiator. Reliability influenced satisfaction most when breakdowns were visible to patients (e.g., conflicting information, repeated administrative steps, unclear follow-up responsibility) (Girma et al., 2025). This configuration aligns with ED experience literature emphasizing communication and perceived timeliness as central drivers, while also reflecting evidence that tangible factors can be highly salient depending on setting and crowding. Importantly, the study does not imply that empathy is unimportant; rather, empathy appeared to shape the "ceiling" of satisfaction patients could be reasonably satisfied with timely, competent care, but highly satisfied when they also felt understood, respected, and emotionally supported (Roitenberg, 2025).

These results directly address the study's initial gap: prior work often identifies general correlates of ED satisfaction without providing nursing-specific, dimension-level explanations that translate

into operational improvement priorities. The present findings provide a more actionable map by showing how patients operationalize each SERVQUAL dimension in ED nursing and how those dimensions interact through EDT mechanisms and Donabedian pathways. The novelty lies in this integrated explanation: SERVQUAL supplies the measurable domains, EDT clarifies satisfaction formation through expectation (dis)confirmation, and Donabedian identifies how structural constraints shape nursing processes and thereby influence the satisfaction outcome. This triangulated account moves beyond stating that "service quality affects satisfaction" by specifying which components matter most, under what conditions, and via what interpretive mechanisms (Silaban & Sinaga, 2025).

In line with the study's objectives to assess ED nursing service quality using SERVQUAL and analyze its impact on satisfaction the findings suggest concrete points of implementation. For responsiveness, improvement is not limited to speed; it includes deliberate "contact frequency" and update routines, especially during long waits. For assurance, consistent messaging across staff, clear triage explanations, and structured discharge communication strengthen trust. For tangibles, privacy-preserving micro-practices and environmental cue management can improve perceived professionalism even when resources are constrained. For reliability, explaining verification steps and strengthening handover clarity reduce perceptions of disorganization. For empathy, short relational behaviors embedded into routine tasks help preserve dignity and reduce anxiety, which can elevate satisfaction in high-stress conditions. These implementation implications align with the broader finding that information provision and expectation alignment are linked to higher ED satisfaction.

The discussion of these results in relation to previous research further clarifies how the present study closes the identified gap. Systematic synthesis of ED patient experience literature frequently highlights communication, waiting-related perceptions, and staff empathy as recurring drivers. The present findings confirm these drivers but specify their nursing-service mechanisms: responsiveness is experienced through acknowledgement and updates; empathy is expressed through micro-behaviors; assurance is built through consistent explanations; tangibles become meaningful through privacy and order; reliability is interpreted through coordination cues. A recent review of factors associated with ED satisfaction similarly emphasizes perceived triage waiting time, meeting expectations, and the role of service quality dimensions. The study extends this evidence by explaining why perceived waiting becomes so influential: waiting becomes tolerable when the service process signals competence and care, but becomes dissatisfying when silence produces negative disconfirmation and erodes trust (Park & Kim, 2025).

From the perspective of EDT, the results reinforce the idea that satisfaction is shaped by both expectations and disconfirmation, and that disconfirmation can be influenced by communication practices that calibrate expectations during service delivery. In ED nursing, this means that improving satisfaction is not solely a matter of reducing objective waiting times (often difficult under system constraints) but also a matter of making the care journey intelligible and emotionally safer for patients. Donabedian's framework strengthens the discussion by preventing overly individualistic interpretations: nurses' ability to be responsive and empathetic is systematically influenced by structures such as staffing levels, physical layout, triage systems, and diagnostic capacity, which shape processes and ultimately outcomes. This is particularly important for EDs where chronic crowding risks normalizing process shortcuts and eroding relational quality (Cho & Hong, 2024).

The study's benefits can be articulated across theoretical, academic, and practical domains through the lens of these three theories. Theoretically, the research contributes to service quality scholarship by demonstrating how SERVQUAL dimensions function in a high-acuity environment and by clarifying the mechanisms linking perceived service quality to satisfaction through expectation disconfirmation and trust formation. Academically, the findings provide a coherent, theory-integrated narrative that can inform future instrument adaptation, mixed-method designs, and comparative studies across EDs, particularly by highlighting how dimension meanings shift under emergency conditions. Practically, the findings produce a prioritization logic for ED nursing management: interventions that strengthen communication-based responsiveness and assurance may yield substantial gains in satisfaction even when structural constraints limit reductions in waiting time. This prioritization is consistent

with broader ED experience evidence that communication and wait perceptions are central drivers and that service quality dimensions are repeatedly implicated in satisfaction (Inman et al., 2025).

Overall, the results and discussion converge on a central conclusion: ED patient satisfaction is best understood as an outcome emerging from the interaction between multidimensional nursing service quality (SERVQUAL), expectation (dis)confirmation dynamics (EDT), and the ED system's structure–process conditions (Donabedian). Addressing the main problem and the research gap therefore requires improvement strategies that operate at both the process level especially communication routines, consistency of explanations, and relational micro-practices and the structural level, including workflow supports that enable nurses to sustain responsiveness, assurance, and empathy under pressure. Within this integrated framework, the study's novelty lies in converting a broad and frequently repeated claim ("service quality influences satisfaction") into a practically interpretable model of how ED nursing service quality produces satisfaction outcomes, thereby directly supporting the study's research questions, objectives, and intended theoretical, academic, and practical contributions.

CONCLUSION

This study, "Study of Nursing Service Quality in the Emergency Department Based on the SERVQUAL Model and Its Impact on Patient Satisfaction," concludes that patient satisfaction in emergency care is driven by multidimensional nursing service quality rather than a single factor such as waiting time. Across interviews, observations, and document review, stakeholders consistently described quality through the SERVQUAL dimensions responsiveness, assurance, tangibles, reliability, and empathy yet their influence on satisfaction was not equal. Responsiveness and assurance were the most influential because they reduced uncertainty and protected trust during clinically necessary delays. Tangibles shaped first impressions and dignity, reliability mattered when coordination breakdowns were visible to patients, and empathy operated through brief micro-behaviors that eased distress.

These conclusions reflect the results showing that satisfaction forms continuously across the ED journey. Patients were more satisfied when nurses acknowledged them promptly, provided periodic updates, and followed through on what they said they would do. Dissatisfaction was most likely when silence, inconsistent messages, or unclear responsibility created an impression of neglect or disorganization. When nurses explained triage priorities and next steps in understandable terms, patients more readily accepted delays as safety-driven. Thus, in this setting, responsiveness is experienced as both timeliness and communication, while assurance is built through consistent, comprehensible explanations.

The three-theory integration clarifies why these patterns occur. SERVQUAL provides the diagnostic map for locating service quality in concrete nursing behaviors and environmental cues. Expectation Disconfirmation Theory is reflected in how patients compared what they expected on arrival with what they experienced during care; satisfaction improved when nursing actions met expectations or credibly recalibrated them through information and reassurance. Donabedian's structure–process–outcome logic explains how crowding, staffing intensity, layout limits, and diagnostic bottlenecks shaped nursing processes (communication, coordination, privacy practices) that ultimately produced satisfaction outcomes. Together, the theories support the conclusion that, even under structural pressure, intentional nursing processes can substantially improve perceived quality and satisfaction.

Addressing the main problem and research gap, the study concludes that global satisfaction scores become operationally useful only when translated into nursing-relevant, dimension-level targets. Without this translation, improvement efforts may overemphasize time metrics that are difficult to change quickly while overlooking high-leverage process behaviors that patients interpret as quality. The study specifies ED-relevant meanings for each dimension: responsiveness includes acknowledgement and updates; assurance includes transparent triage rationale and consistent messaging; tangibles include privacy-supporting space management; reliability includes coherent handovers and explained verification steps; and empathy includes respectful tone and reassurance embedded in routine care.

In line with the study objectives, the conclusions point to practical implementation priorities. Communication-based responsiveness routines (brief check-ins and clear time promises) and standardized triage and discharge explanations can strengthen assurance and reduce dissatisfaction when waits

occur. Privacy-preserving micro-practices and simple environmental orientation can improve tangible impressions and dignity. Reliability can be improved by reducing conflicting information at handovers and by explaining safety-related repetition so it is not misread as inefficiency. Empathy can be sustained through short relational behaviors that acknowledge discomfort and anxiety without slowing care.

The study contributes theoretically by demonstrating how SERVQUAL dimensions interact with expectation disconfirmation within a high-acuity ED system, academically by providing a coherent basis for future instrument refinement and mixed-method designs, and practically by offering a prioritization logic for nurse managers focused on communication, trust, and dignity. Future research should test transferability across multiple EDs, triangulate experience themes with operational indicators, and evaluate whether dimension-prioritized interventions improve satisfaction while preserving clinical safety and equity. Overall, the study substantiates a clear conclusion: in emergency nursing care, patient satisfaction is most strongly shaped by nurses' visible, respectful communication and reassurance under pressure, making these processes high-impact targets for sustainable quality improvement.

Finally, the findings imply that improving satisfaction should be approached as a systems task rather than an individual performance issue. Nurses described empathy and responsiveness as harder to sustain when workloads surge, interruptions are frequent, and physical space limits privacy. Accordingly, managerial actions such as staffing plans that anticipate peak periods, role clarity for who provides updates, and workflow supports that reduce avoidable rework are integral to protecting the very nursing behaviors patients value most. At the same time, the conclusions remain context-sensitive because the study examined one tertiary ED; patient accounts were also influenced by acuity, discomfort, and outcomes, which can shape perceptions of service quality.

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