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A Systematic Review Of The Impact Of Service Quality Dimensions And Facilities On Patient Satisfaction In Hospital Dental Clinics

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ABSTRACT

Objectives: *This systematic review aims to critically evaluate the impact of service quality dimensions and facility characteristics on patient satisfaction in hospital dental clinics, using the SERVQUAL model as an analytical framework.*

Methods: *A systematic search was conducted across PubMed, ScienceDirect, and Google Scholar for studies published between January 2019 and May 2024. Inclusion criteria followed the PICOS framework and adhered to PRISMA 2020 guidelines. Eligible studies included quantitative research assessing at least one of the five SERVQUAL dimensions (tangibility, reliability, responsiveness, assurance, and empathy) and/or facility-related variables in relation to patient satisfaction. A narrative synthesis was performed due to heterogeneity in study designs and measurement tools.*

Results: *Eleven studies were included, conducted across various countries including Indonesia, Malaysia, Thailand, Pakistan, and Saudi Arabia. Empathy, responsiveness, and assurance consistently emerged as dominant predictors of patient satisfaction. Tangibles such as facility cleanliness and modern equipment were also influential, particularly in shaping first impressions. Contextual factors such as pandemic-related safety expectations and cultural norms were identified as moderators in several studies.*

Conclusions: *Patient satisfaction in hospital dental clinics is strongly influenced by both service quality dimensions and physical facility conditions. Interpersonal aspects of care, such as empathy and assurance, have enduring effects on patient trust and perceived value, while infrastructure plays a supporting role in enhancing comfort and confidence. Future research should adopt longitudinal and mixed-methods approaches to better capture the dynamics of satisfaction over time and inform targeted quality improvement strategies.*

Keywords: *Patient satisfaction; Dental clinic; Hospital dentistry; Service quality; SERVQUAL; Healthcare facilities; Systematic review.*

INTRODUCTION

Oral health is a fundamental aspect of general health and significantly contributes to an individual's overall quality of life. Dental health services provided in hospital settings are pivotal in delivering integrated and multidisciplinary care, encompassing promotive, preventive, curative, and rehabilitative efforts. As the demand for hospital-based dental services grows—particularly in urbanized and aging populations—so does the need to ensure that such services meet patient expectations and yield high levels of satisfaction.[1]

Patient satisfaction is increasingly recognized as a core performance indicator in healthcare delivery. It reflects the extent to which patient expectations align with their actual experiences, encompassing not only clinical outcomes but also interpersonal interactions, environmental conditions, and service efficiency[2]. In the context of dental care, satisfaction is influenced by multiple variables, including service

quality dimensions, the competence and demeanor of healthcare providers, and the quality of physical infrastructure[3].

The SERVQUAL model, originally proposed by Parasuraman et al., remains one of the most widely adopted frameworks to assess service quality in healthcare settings[4]. It includes five key dimensions:

1. Tangibles – physical appearance of facilities, cleanliness, equipment, and staff attire.
2. Reliability – ability to deliver accurate and dependable services.
3. Responsiveness – willingness and promptness in assisting patients.
4. Assurance – competence, courtesy, and ability to instill trust.
5. Empathy – provision of caring, individualized attention.

These dimensions together shape how patients evaluate their overall service experience, which in turn affects their satisfaction, trust, and intention to return or recommend the service[5,6]. In parallel, the condition and availability of physical facilities—such as waiting areas, dental chairs, sterilization equipment, signage, and accessibility—also play a critical role in shaping patients' perceptions and emotional comfort. Studies have shown that well-maintained and modern infrastructure can enhance the perceived professionalism of a dental clinic, boost trust, and reduce anxiety, especially for first-time patients[7,8].

Several empirical studies from various countries, including Indonesia, Malaysia, Thailand, and Saudi Arabia, have investigated the association between service quality, facilities, and patient satisfaction in dental clinics. The results consistently highlight that while tangible factors create the first impression, dimensions such as empathy**,** responsiveness, and assurance have stronger and more sustained impacts on patient satisfaction and loyalty[9-12].

Despite the growing body of literature, no recent systematic synthesis has comprehensively examined how both service quality dimensions and physical facilities collectively influence patient satisfaction specifically in hospital dental clinics. Given that hospital-based dental services often differ in complexity, patient volume, and infrastructure compared to private practices or community clinics, a focused review is warranted.

Therefore, this systematic review aims to critically evaluate and synthesize available evidence regarding the impact of service quality dimensions and facilities on patient satisfaction in hospital dental clinics, using structured methodological criteria and established quality appraisal tools.

METHODS

This study employs a clear and systematic approach to ensure the reliability and validity of the findings. Below are the components of the methodology:

Research Type

This systematic review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guideline, including the use of the updated flow diagram and 27-item reporting checklist to enhance transparency and reproducibility.[13]

Eligibility Criteria (PICOS)

Eligibility criteria were defined a priori using the **PICOS** framework. Eligible studies:

1. **Population:** Patients receiving care in *hospital-based dental clinics/polyclinics*.
2. **Intervention/Exposure:** Measures of *service quality* (guided by the SERVQUAL dimensions introduced in the Introduction)[4] and/or *facility characteristics* (physical or organizational infrastructure).
3. **Comparison:** Any comparator, including between dimensions, facility levels, or statistical associations (e.g., correlation, regression, SEM).
4. **Outcomes:** *Patient satisfaction* assessed via validated questionnaires, structured survey tools, or composite satisfaction scores.
5. **Study design:** Quantitative empirical studies (cross-sectional, correlational, SEM-based, or observational analytic) published **January 1, 2019–May 31, 2024** in English orIndonesian. Exclusion: non-hospital dental settings; qualitative/descriptive reports without analytical linkage between exposures and satisfaction; conference abstracts lacking full data; studies published before 2019; non-English/Indonesian full texts unavailable. PRISMA recommends specifying inclusion/exclusion criteria in sufficient detail to support reproducibility.[13]

Information Sources & Search Strategy

A comprehensive search was performed in PubMed**,** ScienceDirect, and Google Scholar (last search: May 2024). Search strings combined controlled vocabulary and keywords related to service quality, facilities, patient satisfaction, dental, and hospital terms. A core strategy used: ("service quality" OR "SERVQUAL") AND ("facility" OR "facilities" OR "infrastructure") AND ("patient satisfaction") AND ("dental clinic" OR "dental polyclinic") AND (hospital*) Search syntax was adapted per database. Reference lists of included studies were hand-searched to identify additional records, as recommended by PRISMA to minimize retrieval bias.[13]

Study Selection

All retrieved records were exported to a reference manager and deduplicated. Two reviewers independently screened titles/abstracts against eligibility criteria; potentially relevant articles underwent full-text review. Discrepancies were resolved by consensus. Reasons for exclusion at full-text stage were documented and are summarized in the PRISMA flow diagram, consistent with PRISMA guidance on transparent reporting of study selection.[13]

Data Extraction

A standardized extraction form captured: author, year, country/setting, study design, sample size, measurement instruments for service quality (SERVQUAL dimension mapping when reported[4]), facility indicators, satisfaction outcomes, and key statistical associations. Extraction procedures were piloted on a subset of studies to ensure consistency, in line with PRISMA recommendations to predefine data items[13].

Data Synthesis

Given expected heterogeneity in instruments, scales, and analytic models, a narrative synthesis approach was planned. Findings were grouped by SERVQUAL dimensions (tangibles, reliability, responsiveness, assurance, empathy) and facility-related variables, and their reported associations with patient satisfaction. Where studies reported comparable quantitative metrics (e.g., correlation coefficients), ranges were tabulated descriptively; no meta-analysis was performed because of methodological diversity, consistent with PRISMA flexibility permitting narrative synthesis when pooling is inappropriate.[13]

RESULT

Articles that appear in the database were filtered using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram guidelines, as shown in Figure 1. The search conducted using Boolean sentences yielded 647 articles, and then filtering was carried out according to the inclusion and

exclusion criteria, resulting in 11 articles that met the criteria.

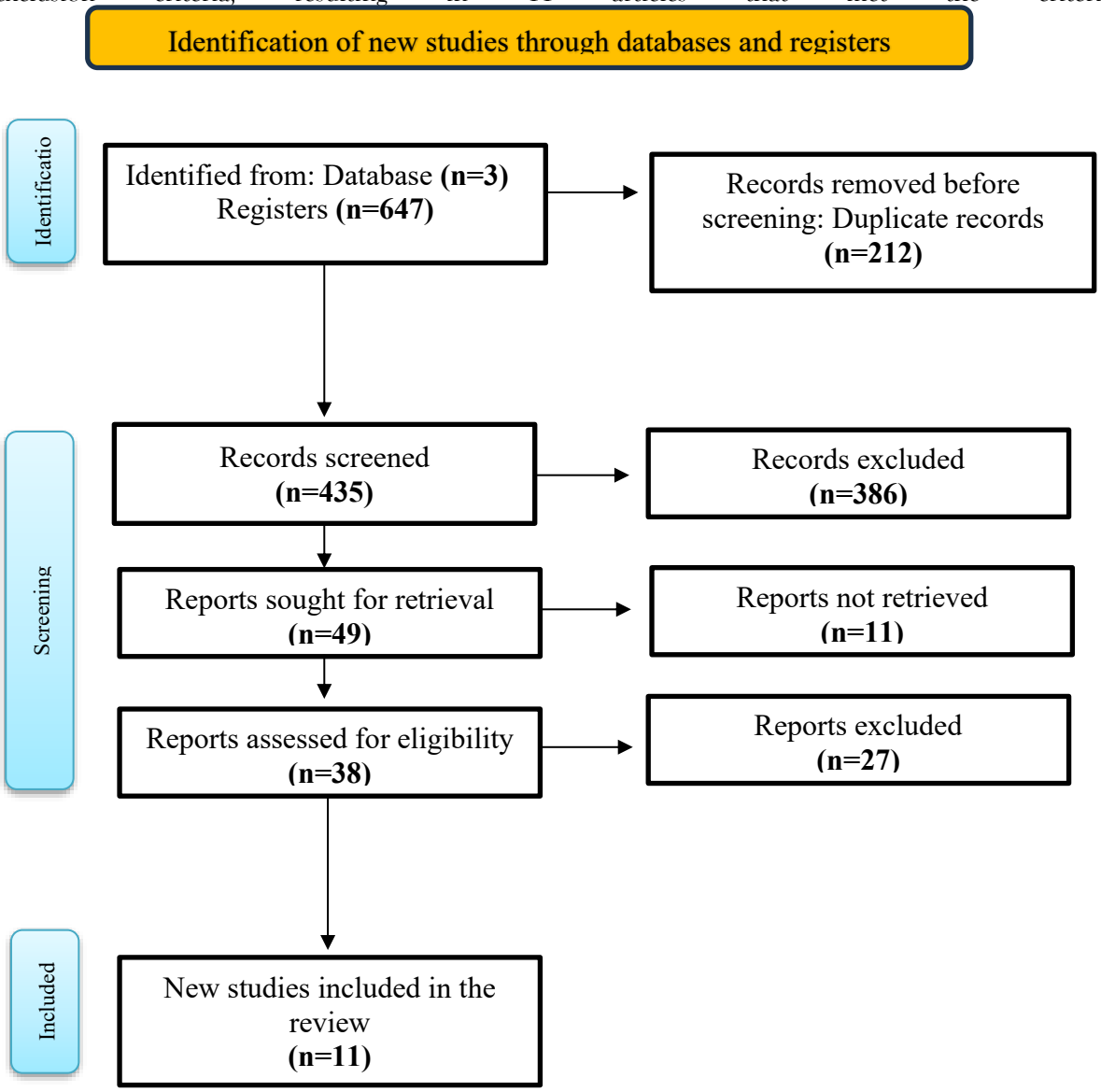

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)

The articles are presented in a table with information in the form of the authors' names, years, title, publishers country of origin, and results. Data obtained from journals that meet the inclusion criteria are entered into Table 1.

Table 1. Summary of Included Studies in the Systematic Review

No	Author(s)	Year	Study Focus	Key Findings	Moderating Factors	Geographic Context
1	Ahmed et al.	2021	Service Quality dimensions and satisfaction s	Responsiveness and Reliability predicted satisfaction	None explicitly stated	Pakistan
2	Al-Jabri et al.	2021	Humane caring and patient perceptions	Assurance and Empathy had higest impact	Facility layout, signage	Saudi Arabia
3	Ali et al.	2016	Satisfaction in dental centers	Empathy & Responsiveness influenced revisit intention	Staff communication	Saudi Arabia

4	Daniati	2020	Service quality and revisit intention	Tangibles & reliability linked to satisfaction	Cleanliness, equipment	Indonesia
5	Bustamin	2022	Patient satisfaction during COVID-19	Assurance & empathy remained vital	Pandemic protocol readiness	Indonesia
6	Fitra Nova	2020	Inpatient satisfaction analysis	Empathy & tangibles significant	Hospital layout	Indonesia
7	Nurilawaty et al.	2021	Outpatient satisfaction at polyclinic	Responsiveness most influential	Facility condition	Indonesia
8	Sagay et al.	2023	Satisfaction at dental clinic	Empathy most predictive	Signage & waiting areas	Indonesia
9	Tiyas	2022	Quality, satisfaction, and loyalty	Tangibles & reliability dominant	Facility maintenance	Indonesia
10	Ibrahim	2024	SERVQUAL influence in Malaysia	Assurance & empathy strongest	Partial facility indicators	Malaysia
11	Siripipatthanakul	2021	Satisfaction & revisit intention	All dimensions influenced satisfaction	Gender, marital status, age, education level	Thailand

This table provides a synthesized overview of the 11 studies included in this systematic review. Each study explored the relationship between service quality dimensions and patient satisfaction within hospital dental clinic settings. Key findings across various geographic contexts consistently highlight the significance of empathy, responsiveness, and assurance as dominant service quality factors influencing satisfaction. Additionally, several studies noted the role of moderating factors—such as facility condition, staff communication, and pandemic preparedness—which may affect patient perceptions of service quality. While most studies adopted cross-sectional designs, the diverse geographic settings—from Southeast Asia to the Middle East—enhance the contextual relevance of the findings and underscore the global importance of service quality in dental healthcare.

DISCUSSION

This systematic review consolidates evidence from 11 quantitative studies exploring the impact of service quality dimensions and physical facilities on patient satisfaction within hospital dental clinic settings. Overall, the results support the widely acknowledged notion that patient satisfaction in dental healthcare is a multidimensional construct influenced by both subjective perceptions and objective infrastructure. This is consistent with the conceptual foundation laid by Petersen, who underscored oral health as an essential component of general health, requiring attention to service systems and delivery quality at every level of care[1]

The SERVQUAL model remains the dominant framework applied in the majority of the included studies, reaffirming the relevance of its five core dimensions: tangibility, reliability, responsiveness, assurance, and empathy[4]. Ibrahim et al. demonstrated that in Malaysian hospital dental clinics, assurance and empathy were the most significant predictors of patient satisfaction[5]. These findings are echoed by Siripipatthanakul in Thailand, where patients who felt confident in the provider's competence and received personal attention were more likely to express satisfaction and revisit intentions[10].

Empathy and responsiveness were particularly influential in settings with high patient load and limited provider time. In Indonesian clinics, Sagay et al. and Nurilawaty et al. reported that patients valued communication, attention, and care from staff even more than the physical condition of the facility[8,9]. This emphasizes that despite infrastructural challenges, human interaction remains at the heart of perceived quality in healthcare service delivery.

Nevertheless, tangibility—referring to physical facilities, cleanliness, equipment, and staff appearance—also played a significant role, especially in shaping patients' first impressions. Daniati and Tiyas showed that tangible factors such as the hygiene of dental chairs, availability of clean tools, and comfort of waiting rooms were crucial to the perceived reliability of care [file-based studies]. These physical aspects often serve as external cues for internal service quality and help build trust.

The expectation-disconfirmation paradigm further illuminates these findings. As highlighted by Prip et al., satisfaction results from the alignment (or misalignment) between patient expectations and the perceived quality of service received[2]. In environments where patients had higher expectations—often shaped by prior experiences, cultural norms, or public discourse—the risk of dissatisfaction was greater when services were not responsive or facilities fell short of expectations.

Several studies, such as those by Bustamin and Aljabri, explored patient satisfaction during or shortly after the COVID-19 pandemic, introducing a new layer of complexity[3]. In these contexts, patients placed heightened importance on safety protocols, staff hygiene, and transparent communication regarding infection prevention measures. This suggests that service quality perceptions are also temporally sensitive, influenced by situational factors and public health contexts.

Moreover, this review also highlights the need to adapt the SERVQUAL framework to specific cultural and institutional settings. Nazeer et al. emphasized that although SERVQUAL provides a robust structure, its application must be context-specific to reflect local healthcare expectations and patient-provider dynamics[6]. For example, while assurance may dominate in one context, empathy or tangibility may carry more weight elsewhere.

Interestingly, the evolving role of digital technology in dentistry—though only tangentially covered in this review—has potential implications for patient satisfaction. Schierz et al. noted that digital tools such as electronic health records, virtual consultations, and digital impression systems not only improve efficiency but also enhance patient perceptions of modernity and professionalism[7]. As hospitals and clinics increasingly integrate digital platforms, future studies may need to evaluate digital tangibility as a new SERVQUAL dimension.

Despite the strength of evidence presented, several methodological limitations should be noted. Most studies employed cross-sectional designs, making it difficult to infer causality or assess long-term satisfaction trends. Self-reported satisfaction scores are inherently subjective and may be influenced by recall bias or social desirability. Additionally, the diversity of instruments and SERVQUAL adaptations limits the comparability of results.

Moving forward, future research should explore longitudinal and mixed-methods designs to deepen understanding of satisfaction trajectories over time. Incorporating qualitative interviews would provide richer narratives, uncovering latent expectations and emotional responses often missed in structured surveys. Moreover, as the field embraces telehealth and digital transformation, future studies should also assess how these innovations influence perceived service quality, particularly in resource-limited dental hospital settings.

In summary, the findings of this systematic review affirm that patient satisfaction in hospital dental clinics is shaped by a complex interplay between service quality dimensions and facility conditions. Tailored interventions—focusing on staff empathy, clear communication, and improved infrastructure—are necessary to enhance satisfaction and maintain trust in institutional dental care.

This systematic review synthesizes evidence from recent empirical studies to examine the relationship between service quality dimensions, physical facility characteristics, and patient satisfaction in hospital-based dental care settings. Drawing upon the SERVQUAL model and its various adaptations, the findings demonstrate that patient satisfaction is a complex, multifactorial construct influenced not only by technical competence but also by the interpersonal and environmental attributes of care delivery.

Among the five SERVQUAL dimensions, empathy, responsiveness, and assurance consistently emerged as the most influential predictors of satisfaction. These dimensions reflect patients' expectations of being treated with respect, receiving timely assistance, and feeling confident in the clinical competence of providers. In dental hospital settings, where patients may experience anxiety or vulnerability, such interpersonal elements are especially vital. Furthermore, studies emphasized that even in contexts with limit.

Tangibility, including physical cleanliness, modern equipment, and facility accessibility, was also identified as a critical factor—especially in shaping first impressions and influencing perceptions of safety

and professionalism. While its influence may be less enduring than human interaction, the condition of the facility remains an essential aspect of overall patient experience. These findings highlight the dual necessity for hospitals to invest both in physical infrastructure and in human resources.13

This review also reinforces the importance of contextual factors. Geographic setting, cultural expectations, and pandemic-related safety concerns were found to moderate how patients perceive and evaluate care. For instance, in the aftermath of the COVID-19 pandemic, patient expectations regarding infection control, hygiene standards, and transparent communication have heightened significantly. These contextual influences must be considered when designing quality improvement strategies.[14,15]

The implications of this review are significant for healthcare policymakers, hospital administrators, and dental clinicians. For administrators, it underscores the need for continuous training in communication and empathy for frontline staff, along with periodic upgrades of dental equipment and physical spaces. For policymakers, the findings call for more nuanced regulations that consider both technical standards and patient-centered metrics. For clinicians, the evidence serves as a reminder that quality care.[13-15]

However, limitations were identified in the methodological quality of included studies, such as reliance on cross-sectional designs, varying measurement tools, and absence of qualitative insights. These gaps point to the need for more robust future research. Longitudinal designs and mixed-methods approaches are recommended to capture both quantitative trends and qualitative experiences over time.

CONLUSION

In conclusion, ensuring high patient satisfaction in hospital dental services requires a holistic, balanced approach that integrates interpersonal care, efficient service delivery, and adequate facility infrastructure. As healthcare systems increasingly prioritize patient-centered outcomes, the incorporation of patient satisfaction measures into service evaluation and improvement processes becomes indispensable. This review provides a foundational basis for informed quality enhancement strategies and future scholarly.

AUTHOR'S CONTRIBUTION STATEMENT

This systematic review would not have been possible without the support and contributions of various individuals and institutions. First and foremost, I extend my deepest gratitude to my academic advisor, Prof. Dr. Edy Machmud, drg., Sp.Pros., Subsp. OGST (K) for their invaluable guidance, insights, and encouragement throughout the course of this study.

CONFLICTS OF INTEREST

Confirms that the authors have declared any potential conflicts that could influence the impartiality of the research. The authors explicitly state that they have no financial or personal relationships with entities that might unduly affect their objectivity. This declaration ensures the integrity of the study by transparently addressing any possible influences on the research outcomes, contributing to the credibility and trustworthiness of the article.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

Authors are required to transparently disclose any use of generative artificial intelligence (AI) tools or AI-assisted technologies—such as ChatGPT, Grammarly, or DeepL—during the manuscript preparation process. This policy aims to uphold academic integrity, promote responsible authorship practices, and ensure compliance with ethical publication standards. If AI tools have been employed to support language refinement, enhance clarity, or improve the overall readability and structure of the manuscript.

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