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Evaluating Healthcare Service Quality and Patient Satisfaction: Evidence from Hospitals in Madurai District.

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Abstract: Patient satisfaction is an important indicator of healthcare service quality, particularly in private sector hospitals. This study examines the influence of five service quality dimensions, namely tangibles, reliability, responsiveness, assurance and empathy, on patient satisfaction. A descriptive cross-sectional research design was adopted, and primary data were collected from 165 respondents using a structured questionnaire. The collected data were analysed using multiple regression analysis. The findings reveal that all five dimensions have a positive and statistically significant influence on patient satisfaction. The regression model explains 53% of the variation in patient satisfaction ($R^2 = 0.530$) and is statistically significant ($F = 35.822$, $p < 0.001$). Responsiveness emerged as the strongest predictor, followed by empathy, tangibles, assurance and reliability. The study concludes that improving service responsiveness, individualised patient care and overall service delivery is essential for enhancing patient satisfaction in private sector hospitals.

Keywords: Patient Satisfaction, Service Quality, Tangibles, Reliability, Responsiveness, Assurance, Empathy, Private Sector Hospitals.

1 Introduction

Healthcare service quality has emerged as a significant determinant of healthcare system effectiveness and patient well-being. Healthcare institutions are increasingly expected to provide services that are not only clinically effective but also accessible, reliable, responsive and patient-centred. The quality of healthcare services influences patients' perceptions, treatment experiences, trust and willingness to continue using healthcare facilities. Unlike conventional services, healthcare involves complex interactions between medical professionals, patients and institutional infrastructure, making service quality a multidimensional concept. Consequently, evaluating healthcare service quality has become essential for identifying service deficiencies, improving patient experiences and strengthening the overall performance of healthcare institutions (Mosadeghrad, 2014; Upadhyai et al., 2019).

The quality of healthcare services is generally evaluated through both technical and functional aspects of service delivery. Technical quality relates to the professional competence of healthcare providers, accuracy of diagnosis and effectiveness of treatment, whereas functional quality concerns how healthcare services are delivered to patients. These aspects include staff behaviour, communication, accessibility, waiting time, responsiveness and the physical environment of healthcare facilities. Mosadeghrad (2014) emphasised that healthcare service quality is influenced by individual, organisational, healthcare system and environmental factors. The study further highlighted the importance of effective leadership, adequate resources, professional training and efficient management of healthcare processes in improving service quality. Similarly, Upadhyai et al. (2019), in their review of healthcare service quality dimensions, observed that service quality is multidimensional and that patients evaluate medical and non-medical aspects differently depending on their healthcare experiences and expectations. Patient satisfaction has consequently become an important indicator for assessing the effectiveness of healthcare service delivery. It represents the overall evaluation of healthcare experiences based on the comparison between patients' expectations and the actual services received. Satisfaction is influenced by several factors, including the competence of medical professionals, quality of nursing care, availability of medical

facilities, administrative efficiency, communication and the ability of healthcare institutions to provide timely treatment. Satisfied patients are more likely to develop trust in healthcare providers, adhere to medical advice, revisit the same healthcare institution and recommend its services to others. Therefore, patient satisfaction is not merely an individual assessment of healthcare experiences but also an important consideration for institutional reputation, patient retention and organisational sustainability (Wulandari et al., 2024; Yunus et al., 2024).

Among the various frameworks available for measuring healthcare service quality, the SERVQUAL model developed by Parasuraman et al. (1988) has been widely applied in healthcare research. The model evaluates service quality through five dimensions: tangibility, reliability, responsiveness, assurance and empathy. Tangibility refers to the physical facilities, medical equipment, cleanliness and appearance of healthcare personnel. Reliability represents the ability of healthcare providers to deliver accurate and dependable services consistently. Responsiveness concerns the willingness of healthcare personnel to provide prompt assistance and attend to patients' needs. Assurance reflects the knowledge, professional competence, courtesy and ability of healthcare providers to establish patient confidence. Empathy represents the individualised attention, understanding and compassionate care extended to patients. These dimensions provide a comprehensive framework for understanding patients' perceptions of healthcare service quality and their relationship with overall satisfaction (Byju & Srinivasulu, 2014; Upadhyai et al., 2019).

Empirical studies have consistently demonstrated the importance of healthcare service quality in determining patient satisfaction. Byju and Srinivasulu (2014), in their study of private healthcare services in the Pondicherry region using the SERVPERF framework, identified responsiveness, empathy and tangibility as important factors associated with overall patient satisfaction. Their findings highlighted the significance of interpersonal interactions and physical facilities in shaping patients' perceptions of healthcare services. Similarly, Sumardika et al. (2024), in their investigation of Kartika Husada Jatiasih Hospital, reported that healthcare service quality had a positive and significant effect on patient satisfaction. The study emphasised the importance of professional behaviour, effective communication and appropriate healthcare facilities in meeting patient expectations. These findings reinforce the importance of systematically evaluating service quality to identify areas requiring managerial attention and improvement.

Recent research has further highlighted the relationship between healthcare service quality and patient satisfaction across different healthcare settings. Wulandari et al. (2024), in a study involving 380 respondents at Bunda Purwokerto Hospital, established a positive relationship between healthcare service quality and patient satisfaction. The study emphasised the importance of the physical environment, responsiveness, effective communication, privacy and patient safety in strengthening patient experiences. Similarly, Mirnawati et al. (2026) examined the five SERVQUAL dimensions in primary healthcare and identified the importance of reliable services, responsiveness, assurance, empathy and adequate physical facilities in promoting patient satisfaction. Their findings also highlighted operational challenges such as inadequate infrastructure, high patient volumes, shortages of healthcare personnel and administrative inefficiencies. These studies demonstrate that patient satisfaction depends not only on medical treatment but also on the overall quality of interactions and services experienced within healthcare institutions.

The importance of evaluating healthcare service quality is particularly relevant in the Indian healthcare environment, where hospitals operate under varying organisational, infrastructural and resource conditions. Public and private hospitals differ in their service delivery arrangements, resource availability, administrative systems and patient-handling capacities. In this context, patients evaluate healthcare institutions based on several factors, including accessibility, affordability, waiting time, medical competence, nursing care, cleanliness and the availability of diagnostic and treatment facilities. Upadhyai et al. (2019) observed that healthcare service quality in India requires attention to both medical and non-medical service dimensions, particularly in relation to

accessibility, availability and affordability. Their review also highlighted that patient-centred healthcare delivery and systematic measurement of service quality are essential for improving institutional performance.

Tamil Nadu has a diverse healthcare environment comprising government hospitals, private multispecialty hospitals, specialty hospitals and other healthcare institutions catering to different socioeconomic groups. Madurai District represents an important geographical setting for examining healthcare service quality because hospitals serve patients with varying medical requirements, socioeconomic backgrounds and expectations regarding treatment and service delivery. Patients' experiences may differ according to the type of hospital, availability of medical infrastructure, professional competence, administrative efficiency and the responsiveness of healthcare personnel. Consequently, evaluating patient satisfaction across hospitals in Madurai District can provide useful insights into the strengths and weaknesses of healthcare service delivery from the patients' perspective. However, the present study does not assume that all hospitals experience identical service quality challenges; rather, it seeks to examine these issues empirically.

Despite the growing academic attention towards healthcare service quality, continuous evaluation remains necessary because patient expectations and healthcare delivery requirements are constantly evolving. Alfina et al. (2026), in their study of outpatient healthcare service quality, demonstrated the usefulness of Importance-Performance Analysis and the Kano model in identifying service attributes requiring immediate improvement. Their findings highlighted the importance of modern medical equipment, staff readiness, efficient admission procedures and professional competence. Similarly, Oloya-Salazar et al. (2026), in their comparative study of public and private healthcare institutions, identified differences in perceived service quality and patient satisfaction, highlighting the importance of empathy and tangible service attributes. These studies suggest that healthcare institutions need to periodically assess patients' perceptions to identify critical service gaps and develop appropriate improvement strategies.

Against this background, the present study, titled Evaluating Healthcare Service Quality and Patient Satisfaction: Evidence from Hospitals in Madurai District, aims to evaluate the quality of healthcare services and examine their relationship with patient satisfaction. The study adopts the SERVQUAL framework, considering tangibility, reliability, responsiveness, assurance and empathy as the principal dimensions of healthcare service quality. By examining patients' perceptions across these dimensions, the study seeks to identify the service attributes that contribute to patient satisfaction and the areas requiring improvement. The findings are expected to provide useful insights for hospital administrators, healthcare professionals and policymakers in strengthening patient-centred healthcare delivery, improving service standards and enhancing patient satisfaction in private sector hospitals across Madurai District.

2 Review of Literature

The present study considers five dimensions of healthcare service quality, namely tangibles, reliability, responsiveness, assurance and empathy, as independent variables and patient satisfaction as the dependent variable. The Review of Literature is organised according to these five dimensions and their relationship with patient satisfaction

2.1 Tangibles and Patient Satisfaction

Tangibles refer to the physical facilities, medical equipment, hospital infrastructure, cleanliness, waiting areas and professional appearance of healthcare personnel. In hospital environments, the physical surroundings play an important role in shaping patients' initial impressions and perceptions of service quality. Adequate medical equipment, hygienic treatment areas, comfortable waiting facilities and well-maintained infrastructure can create confidence among patients and contribute to a positive healthcare experience. Physical facilities are particularly important because patients often evaluate the quality of healthcare institutions through visible service attributes, especially when they cannot independently assess the technical aspects of medical treatment.

Kansra and Jha (2016), in their study titled Measuring Service Quality in Indian Hospitals: An Analysis of SERVQUAL Model, examined service quality in hospitals in the Jalandhar region using a structured questionnaire containing 25 variables across the five SERVQUAL dimensions. The study employed exploratory and confirmatory factor analysis to assess the measurement framework. Interestingly, the findings did not support the original five-dimensional structure in the Indian hospital context, resulting in a reduced four-factor measurement model. The study highlights the importance of validating service quality dimensions within specific healthcare environments rather than assuming that the original SERVQUAL structure will operate identically across all settings.

Ali et al. (2026), in their investigation of public and private healthcare service quality in Trujillo, Peru, examined the relationship between patients' perceptions of service quality and satisfaction. Their findings identified tangible facilities and empathy as important factors associated with patient satisfaction, although their influence varied between public and private healthcare institutions. The study emphasised that the physical environment and availability of appropriate facilities contribute to patients' overall assessment of hospital services.

Kumar and Kumar (2024), in their study Evaluating Patient Satisfaction and Service Quality in Uttarakhand Hospitals, examined the five SERVQUAL dimensions among 400 hospital patients. Their findings indicated differences in perceived service quality between public and private hospitals. The results also highlighted the importance of improving hospital facilities and other service attributes to enhance patient experiences.

The above studies indicate that physical infrastructure, cleanliness, medical equipment and other tangible facilities contribute to patients' evaluations of healthcare service quality. Accordingly, the present study examines tangibles through the adequacy of hospital facilities, modern medical equipment, cleanliness, comfortable waiting areas and the professional appearance of healthcare personnel. It is expected that better tangible facilities will positively influence patient satisfaction in hospitals across Madurai District.

2.2 Reliability and Patient Satisfaction

Reliability represents the ability of hospitals and healthcare professionals to provide accurate, dependable and consistent services. It encompasses diagnostic accuracy, timely treatment, proper maintenance of medical records, consistency in healthcare procedures and the fulfilment of service commitments. Reliability is particularly important in healthcare because patients depend on medical professionals for decisions concerning diagnosis, treatment and recovery. Consistent and dependable healthcare delivery strengthens patients' confidence and reduces uncertainty regarding the treatment they receive.

Meesala and Paul (2018), in their study Service Quality, Consumer Satisfaction and Loyalty in Hospitals: Thinking for the Future, investigated service quality and patient satisfaction across 40 private hospitals in Hyderabad, India. The study considered the five SERVQUAL dimensions and employed path analysis to examine their relationships with patient satisfaction and hospital loyalty. The findings revealed that reliability and responsiveness significantly influenced patient satisfaction, whereas tangibility, assurance and empathy did not demonstrate significant individual effects. The authors highlighted the importance of timely service delivery, billing accuracy, promptness and effective communication regarding service schedules. These findings establish the importance of dependable healthcare processes in improving patient satisfaction. Jandavath and Byram (2016), in their investigation of corporate hospitals in South India, examined the influence of healthcare service quality dimensions on patient satisfaction and behavioural intentions. The study collected data from 500 inpatients and employed structural equation modelling to examine the relationships among the variables. Their findings highlighted the interrelationships between the SERVQUAL dimensions and patient satisfaction, particularly the role of empathy in influencing other service quality dimensions. The study provides relevant evidence from South Indian corporate hospitals and demonstrates the importance of examining service quality as an interconnected set of dimensions.

Based on the reviewed literature, reliability in the present study is examined through diagnostic accuracy, consistency of treatment, timely delivery of healthcare services, dependable medical procedures and accurate administrative processes. It is expected that higher reliability will positively influence patient satisfaction in hospitals across Madurai District.

2.3 Responsiveness and Patient Satisfaction

Responsiveness refers to the willingness and ability of healthcare professionals and hospital personnel to provide prompt assistance and attend to patients' requirements without unnecessary delays. In hospital settings, responsiveness is reflected through timely medical attention, quick responses to patient enquiries, efficient appointment and admission procedures, prompt handling of complaints and immediate assistance during emergencies. Patients generally expect healthcare institutions to respond effectively to their medical and administrative needs. Delays in consultations, diagnostic procedures and treatment may create dissatisfaction, particularly when patients require urgent medical attention.

Meesala and Paul (2018) examined responsiveness as one of the major determinants of patient satisfaction in private hospitals in Hyderabad. Their empirical findings established a significant relationship between responsiveness and patient satisfaction. The study particularly highlighted the importance of timely delivery of services, promptness and employees' willingness to assist patients. The findings suggest that responsiveness is an important operational attribute influencing patients' overall evaluation of hospital services. Kumar and Kumar (2024), in their investigation of public and private hospitals in Uttarakhand, examined the five SERVQUAL dimensions among 400 patients. Their findings identified differences in perceived service quality across hospital categories and indicated the need for improvements in responsiveness and assurance, particularly in public hospitals. The study emphasised that prompt service delivery and effective patient assistance are important for strengthening healthcare experiences.

Uddin et al. (2022), in their study Developing a Scale Measuring Patient Expectations and Service Quality of Hospitals in India during COVID-19, developed the PAND-SERVQUAL measurement framework using responses from 206 participants. The scale identified six factors: assistance, facility and layout, trust, empathy, promptness and knowledge. The inclusion of promptness and assistance as separate factors demonstrates the importance of timely responses and immediate support in patients' evaluations of hospital services. The study provides an Indian healthcare measurement perspective on the importance of responsiveness.

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Accordingly, the present study examines responsiveness through the promptness of medical attention, willingness of staff to assist, timely responses to enquiries, complaint handling and the availability of emergency support. It is expected that greater responsiveness will positively influence patient satisfaction.

2.4 Assurance and Patient Satisfaction

Assurance refers to the knowledge, professional competence, courtesy and credibility demonstrated by healthcare personnel in establishing confidence and trust among patients. In hospitals, patients depend on doctors, nurses and other medical professionals for accurate diagnosis, treatment recommendations and medical guidance. Therefore, professional expertise, respectful behaviour, confidentiality, clear explanations and confidence in treatment procedures are essential elements of assurance. When healthcare professionals demonstrate appropriate knowledge and professional conduct, patients are more likely to feel secure and satisfied with the services received.

Kumar and Kumar (2024), in their comparative study of public and private hospitals in Uttarakhand, identified assurance as an important dimension of healthcare service quality. Their findings indicated that assurance and empathy demonstrated strong positive associations with patient satisfaction. The study highlighted the importance

of professional competence, confidence and trustworthy healthcare interactions in improving patients' perceptions of hospital services. Uddin et al. (2022) developed the PAND-SERVQUAL scale to assess patient expectations and hospital service quality during the COVID-19 pandemic in India. Their measurement framework included trust and knowledge as important dimensions of hospital service quality. The findings highlight the importance of healthcare professionals' expertise, credibility and ability to establish patient confidence, particularly during periods of uncertainty and increased medical vulnerability.

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Based on the reviewed literature, assurance in the present study is examined through the professional competence of healthcare personnel, courteous behaviour, confidence in medical advice, patient confidentiality and the ability of hospital staff to establish trust. It is expected that higher levels of assurance will positively influence patient satisfaction in hospitals across Madurai District.

2.5 Empathy and Patient Satisfaction

Empathy refers to the individualised attention, understanding, kindness and compassionate care demonstrated by healthcare professionals towards patients. In hospital environments, empathy involves understanding patients' medical and emotional requirements, listening carefully to their concerns, respecting their preferences and providing personalised attention. Patients often experience anxiety, uncertainty and emotional stress during treatment. Therefore, compassionate communication, respectful behaviour and individualised attention are important for establishing positive relationships between patients and healthcare providers.

Jandavath and Byram (2016), in their investigation of corporate hospitals in South India, identified empathy as an important dimension in the relationship between healthcare service quality and behavioural intentions. Their findings indicated that empathy influenced other service quality dimensions, including responsiveness, assurance and tangibility, and contributed indirectly to behavioural intentions through patient satisfaction. The study emphasised the importance of patient-oriented interactions and personalised care in corporate healthcare institutions. Meesala and Paul (2018), in their study of private hospitals in Hyderabad, also examined empathy as a dimension of healthcare service quality. Although empathy did not demonstrate a statistically significant individual effect on patient satisfaction in their model, the findings indicated that service quality dimensions do not necessarily contribute equally to satisfaction across different healthcare settings. This highlights the importance of examining the role of empathy within the specific institutional and geographical context of the present research.

Divya et al. (2025), in their systematic review titled Unveiling Excellence in Indian Healthcare: A Patient-Centric PRISMA Analysis of Hospital Service Quality, Patient Satisfaction and Loyalty, examined the literature on healthcare service quality in Indian hospitals. Their review identified the five SERVQUAL dimensions as important factors in patients' evaluation of hospital services and discussed their relationship with patient satisfaction and loyalty. The findings reinforce the importance of patient-centred service delivery and the need to understand the contribution of different service quality dimensions to patient experiences.

Based on the above literature, empathy in the present study is examined through individualised attention, understanding of patient needs, compassionate treatment, respectful behaviour and willingness to listen to patients' concerns. It is expected that greater empathy demonstrated by healthcare professionals will positively influence patient satisfaction.

2.6 Patient Satisfaction

Patient satisfaction represents the overall evaluation of healthcare services received by patients based on their expectations, perceptions and actual treatment experiences. It reflects the extent to which hospitals meet patients' requirements concerning medical treatment, professional behaviour, communication, administrative services and

the overall hospital environment. Patient satisfaction is an important indicator of healthcare service effectiveness because it provides insights into patients' experiences and their perceptions of the quality of care received. In addition, satisfaction can influence patient trust, treatment adherence, repeat hospital visits and willingness to recommend healthcare services to others.

Kond asani and Panda (2015), in their study Customer Perceived Service Quality, Satisfaction and Loyalty in Indian Private Healthcare, examined the relationship between perceived service quality, patient satisfaction and loyalty in Indian private healthcare institutions. Their research highlighted the importance of patients' perceptions of healthcare services in developing satisfaction and long-term relationships with hospitals. The study provides an important foundation for understanding patient satisfaction as an outcome of healthcare service delivery.

Wulandari et al. (2024), in their investigation of Bunda Purwokerto Hospital, examined the impact of healthcare service quality on patient satisfaction using data from 380 respondents. Their findings demonstrated a positive relationship between healthcare service quality and patient satisfaction, with the model explaining 41.3% of the variation in satisfaction. The study highlighted the importance of the physical environment, responsiveness, effective communication, privacy and safety in improving patients' overall healthcare experiences.

The reviewed literature establishes patient satisfaction as an important outcome of healthcare service quality. In the present study, patient satisfaction is considered through overall satisfaction, satisfaction with technical quality, interpersonal care, communication and accessibility and convenience. These dimensions provide a basis for examining patients' overall evaluations of hospital services across Madurai District.

2.7 Relationship Between Healthcare Service Quality and Patient Satisfaction

Healthcare service quality and patient satisfaction are closely interconnected because patients evaluate hospital services through their treatment experiences, interactions with healthcare personnel and the ability of institutions to meet their expectations. The five SERVQUAL dimensions provide a comprehensive framework for understanding this relationship. Tangibles influence patients' perceptions through the physical environment and availability of facilities, while reliability strengthens confidence through accurate and consistent healthcare delivery. Responsiveness contributes to satisfaction by ensuring prompt assistance and timely medical attention. Assurance establishes trust through professional competence and courteous behaviour, whereas empathy strengthens patient-provider relationships through personalised and compassionate care.

Jandavath and Byram (2016) further highlighted the importance of empathy and its interrelationships with other service quality dimensions in South Indian corporate hospitals. Similarly, Wulandari et al. (2024) established a positive relationship between healthcare service quality and patient satisfaction. Collectively, these studies indicate that healthcare service quality is an important contributor to patient satisfaction, although the relative influence of individual dimensions may differ across healthcare institutions.

However, the influence of individual SERVQUAL dimensions may vary according to the nature of healthcare institutions, patient expectations, availability of resources and organisational service delivery practices. Kansra and Jha (2016) demonstrated that the original five-dimensional SERVQUAL structure did not remain unchanged in their Indian hospital sample.

Consequently, the present study proposes an empirical examination of the relationship between tangibles, reliability, responsiveness, assurance and empathy as independent variables and patient satisfaction as the dependent variable. By focusing on hospitals in Madurai District, the study seeks to identify the service quality dimensions that contribute significantly to patient satisfaction and provide insights for improving patient-centred healthcare delivery.

Proposed research hypotheses

- H1: Tangibles have a significant positive relationship with patient satisfaction.
- H2: Reliability has a significant positive relationship with patient satisfaction.
- H3: Responsiveness has a significant positive relationship with patient satisfaction.
- H4: Assurance has a significant positive relationship with patient satisfaction.
- H5: Empathy has a significant positive relationship with patient satisfaction.

Figure 1 Proposed Conceptual framework



3 Materials and Methods

3.1 Research Design

The present study adopts a descriptive cross-sectional research design to evaluate healthcare service quality and patient satisfaction in private sector hospitals in Madurai District. The descriptive approach is used to understand patients' perceptions of healthcare service quality, while the cross-sectional design facilitates the collection of data from respondents at a particular point in time. The study examines five dimensions of healthcare service quality, namely tangibles, reliability, responsiveness, assurance and empathy, as independent variables and general patient satisfaction as the dependent variable. The research design enables an assessment of the relationship between the selected service quality dimensions and patient satisfaction in private healthcare institutions.

3.2 Study Area

The study is geographically confined to Madurai District, Tamil Nadu, India. It focuses exclusively on private sector hospitals providing healthcare services to patients across different medical specialities. Private hospitals are selected to examine patients' perceptions of service quality within privately managed healthcare institutions, considering their physical facilities, professional services, administrative processes and patient-care practices.

3.3 Population of the Study

The population comprises patients receiving healthcare services from private sector hospitals in Madurai District. The study considers patients who have experienced hospital services, including medical consultations, diagnostic

procedures, treatment and other healthcare facilities. Patients who have sufficient experience with the hospital's services are considered appropriate respondents for evaluating the five dimensions of healthcare service quality and their overall satisfaction.

3.4 Sample Size and Sampling Technique

The study uses a sample of 165 respondents selected from patients attending private sector hospitals in Madurai District. Purposive sampling, a non-probability sampling technique, is adopted to select respondents who possess relevant experience of healthcare services provided by the selected hospitals. The respondents are chosen based on their willingness to participate and their ability to evaluate the services received. The sampling approach ensures that information is collected from patients who have direct experience with hospital facilities, medical personnel, administrative procedures and treatment services.

3.5 Sources of Data

The study uses both primary and secondary sources of data.

Primary Data: Primary data are collected directly from 165 respondents using a structured questionnaire. The questionnaire is designed to obtain information regarding patients' perceptions of healthcare service quality and their overall satisfaction with the services provided by private sector hospitals.

Secondary Data: Secondary data are collected from academic journals, research articles, published books and relevant scholarly publications relating to healthcare service quality, patient satisfaction and the SERVQUAL framework. Particular reference is made to Alfina et al. (2026) for the measurement of healthcare service quality and Marshall and Hays (1994) for general patient satisfaction.

3.6 Research Instrument

A structured questionnaire is employed as the primary research instrument for collecting data. The questionnaire is developed by adapting measurement items from established academic literature to suit the objectives and context of the present study. It consists of three sections:

- Section A – Respondent Profile: This section collects demographic and healthcare-related information, including age, gender, educational qualification, occupation, income, type of hospital visit and frequency of hospital visits.
- Section B – Healthcare Service Quality: This section measures the five independent dimensions: tangibles, reliability, responsiveness, assurance and empathy.
- Section C – General Patient Satisfaction: This section measures patients' overall satisfaction with the healthcare services received from private sector hospitals.

The questionnaire statements are framed to capture patients' perceptions of hospital facilities, professional competence, service delivery, staff behaviour and overall healthcare experiences.

3.7 Measurement of Variables and Scale Development

The study incorporates five independent variables and one dependent variable. The measurement instruments are adapted from relevant academic literature to ensure conceptual consistency and contextual suitability.

A. Independent Variables – Healthcare Service Quality

The five independent variables are measured using the service quality attributes adapted from Alfina et al. (2026). Their study developed a structured questionnaire containing 22 service quality attributes across the five SERVQUAL dimensions.

For the present study, these attributes are adapted to the private hospital environment in Madurai District.

Table 1 Independent Variables and Indicators

Variables	Measurement indicators	Source
Tangibles	Hospital facilities, cleanliness, organisation of treatment areas, information boards, hygienic equipment and availability of modern medical equipment	Alfina et al. (2026)
Reliability	Timely availability of doctors and nurses, appropriate medical examinations, prompt nursing services, clarity of medical examination results and understandable explanations	Alfina et al. (2026)
Responsiveness	Availability of staff assistance, efficiency of patient admission procedures and promptness of hospital support services	Alfina et al. (2026)
Assurance	Clarity of doctors' responses, professional competence of medical personnel and courteous behaviour of hospital staff	Alfina et al. (2026)
Empathy	Accessibility of healthcare services, clarity of explanations, emotional support, patient comfort and respect for patients' rights	Alfina et al. (2026)

The original questionnaire contains 22 attributes distributed across the five dimensions: tangibles (6 items), reliability (5 items), responsiveness (3 items), assurance (3 items) and empathy (5 items). The statements are contextualised by replacing references to primary healthcare centres with appropriate private hospital terminology.

B. Dependent Variable – General Patient Satisfaction

General patient satisfaction is measured using the General Satisfaction subscale of the Patient Satisfaction Questionnaire Short Form (PSQ-18), developed by Marshall and Hays (1994). The original PSQ-18 consists of 18 items distributed across seven dimensions, including general satisfaction, technical quality, interpersonal manner, communication, financial aspects, time spent with the doctor and accessibility and convenience.

For the present study, only the General Satisfaction dimension is adopted to measure patients' overall evaluation of the healthcare services received. This subscale contains two items addressing overall satisfaction with medical care and the extent to which patients would prefer their healthcare providers over others.

A five-point Likert scale is adopted to measure all the independent and dependent variables. Respondents are requested to indicate their level of agreement with each questionnaire statement using the following scoring system.

3.9 Data Collection Procedure

Primary data are collected from 165 patients attending selected private sector hospitals in Madurai District. The structured questionnaire is administered through appropriate direct survey methods. The purpose of the study is explained to the respondents, and their participation is voluntary. The completed questionnaires are examined for completeness and consistency before being coded and entered into statistical software for analysis. Confidentiality of respondents' information is maintained throughout the data collection and analysis process.

4 Analysis and Findings

Demographic and Healthcare-related Profile of Respondents

The demographic and healthcare-related profile of the respondents indicates that the majority belong to the 36–45 years age group (27.88%), followed by those aged 25–35 years (25.45%). Male respondents constitute 53.94% of the sample, while females account for 46.06%. Regarding educational qualification, undergraduates represent the largest proportion (32.73%), followed by postgraduates (30.91%). In terms of occupation, private sector employees form the largest group (29.09%), followed by business and self-employed respondents (18.79%). With respect to monthly family income, the highest proportion (26.06%) falls within the ₹20,001–₹40,000 category. Regarding hospital visits, 55.15% of respondents primarily accessed outpatient services, while 29.70% visited for inpatient services. Concerning visit frequency, 31.51% reported visiting hospitals frequently (4–6 times a year), followed by 29.09% who visited occasionally. Overall, the profile represents respondents from diverse demographic and socioeconomic backgrounds, with substantial representation of individuals having regular experience with private hospital services.

Table 2 Demographic and Healthcare-related Profile of Respondents

Profile variables	Categories	Frequency	Percentage
Age	Below 25 years	18	10.91
	25–35 years	42	25.45
	36–45 years	46	27.88
	46–55 years	35	21.21
	Above 55 years	24	14.55
Gender	Male	89	53.94
	Female	76	46.06
Educational Qualification	Up to Higher Secondary	32	19.39
	Undergraduate	54	32.73
	Postgraduate	51	30.91
	Professional Qualification	18	10.91
	Others	10	6.06
Occupation	Government Employee	25	15.15
	Private Sector Employee	48	29.09
	Business / Self-employed	31	18.79
	Professional	22	13.33
	Homemaker	20	12.12
	Student	11	6.67
	Retired / Others	8	4.85

Monthly Family Income	Below ₹20,000	28	16.97
	₹20,001–₹40,000	43	26.06
	₹40,001–₹60,000	39	23.64
	₹60,001–₹80,000	29	17.58
	Above ₹80,000	26	15.75
Type of Hospital Visit	Outpatient Department	91	55.15
	Inpatient Department	49	29.70
	Emergency Services	25	15.15
Frequency of Hospital Visits	First Visit	24	14.55
	Occasionally (2–3 times a year)	48	29.09
	Frequently (4–6 times a year)	52	31.51
	Very Frequently (More than 6 times a year)	41	24.85

Hypothesis Testing

The regression model summary indicates that the five service quality dimensions, namely tangibles, reliability, responsiveness, assurance and empathy, collectively explain 53% of the variation in patient satisfaction (R^2 = 0.530). The adjusted R^2 value of 0.515 indicates that the model explains 51.5% of the variation in patient satisfaction after adjusting for the number of predictors. The standard error of the estimate is 0.29921, suggesting a reasonable model fit.

The ANOVA results reveal that the overall regression model is statistically significant ($F = 35.822$, $p < 0.001$). This indicates that the five service quality dimensions collectively have a significant influence on patient satisfaction.

The coefficient analysis further reveals that all five dimensions have a positive and statistically significant influence on patient satisfaction. Among them, responsiveness ($\beta = 0.312$, $p < 0.001$) has the strongest influence, followed by empathy ($\beta = 0.223$, $p = 0.001$), tangibles ($\beta = 0.196$, $p = 0.002$), assurance ($\beta = 0.185$, $p = 0.006$) and reliability ($\beta = 0.159$, $p = 0.008$). These findings indicate that prompt assistance, individualised attention, quality of physical facilities, professional assurance and dependable healthcare services contribute significantly to patient satisfaction. Overall, the regression results confirm that all five service quality dimensions are significant positive predictors of patient satisfaction in private sector hospitals, with responsiveness emerging as the most influential factor.

Table 3 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.728[a]	.530	.515	.29921
a. Predictors: (Constant), tangibles, reliability, responsiveness, assurance and empathy.				

Table 4 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.035	5	3.207	35.822	.000[b]
	Residual	14.234	159	.090		
	Total	30.269	164			
a. Dependent Variable: Patient Satisfaction						
b. Predictors: (Constant), tangibles, reliability, responsiveness, assurance and empathy.						

Table 5 Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.391	.296		1.321	.188
	Tangibles	.150	.048	.196	3.120	.002
	Reliability	.104	.039	.159	2.690	.008
	Responsiveness	.268	.061	.312	4.390	.000
	Assurance	.166	.060	.185	2.780	.006
	Empathy	.241	.072	.223	3.339	.001
a. Dependent Variable: Patient Satisfaction						

5 Discussion and Conclusion

The findings of the study highlight the significant role of service quality in determining patient satisfaction in private sector hospitals. The regression analysis demonstrates that the five dimensions of service quality, namely tangibles, reliability, responsiveness, assurance and empathy, collectively explain 53% of the variation in patient satisfaction. The statistically significant regression model ($F = 35.822$, $p < 0.001$) confirms that service quality is an important determinant of patients' overall satisfaction with healthcare services.

Among the five dimensions, responsiveness emerged as the strongest predictor of patient satisfaction ($\beta = 0.312$, $p < 0.001$). This finding emphasises the importance of providing prompt medical assistance, reducing waiting time, addressing patient queries and responding effectively to healthcare needs. Empathy was identified as the second most influential dimension ($\beta = 0.223$, $p = 0.001$), highlighting the importance of individualised attention, personal care and understanding patients' concerns. Tangibles ($\beta = 0.196$, $p = 0.002$) also demonstrated a significant positive influence, indicating that hospital infrastructure, medical equipment, cleanliness and the professional appearance of healthcare personnel contribute to patients' satisfaction. Similarly, assurance ($\beta = 0.185$, $p = 0.006$) positively influences patient satisfaction, suggesting that professional competence, courtesy and the ability of healthcare staff to establish confidence are important considerations for patients. Reliability ($\beta = 0.159$, $p = 0.008$), although comparatively the least influential dimension, also has a significant positive

relationship with patient satisfaction, demonstrating the importance of accurate, consistent and dependable healthcare services.Overall, the findings suggest that patient satisfaction is influenced not only by the technical aspects of healthcare delivery but also by the quality of interactions between patients and healthcare professionals. Private sector hospitals should therefore adopt a comprehensive approach to service quality improvement, with particular emphasis on responsiveness and empathy to strengthen patient experiences and satisfaction.

The study concludes that service quality plays a significant role in enhancing patient satisfaction in private sector hospitals. All five dimensions of service quality have demonstrated positive and statistically significant influences on patient satisfaction, thereby establishing their importance in healthcare service delivery. Responsiveness emerged as the most influential dimension, followed by empathy, tangibles, assurance and reliability. The findings indicate that patients place considerable importance on timely assistance, individualised attention, appropriate infrastructure, professional competence and dependable medical services. Accordingly, private sector hospitals should prioritise patient-centred healthcare practices, improve the responsiveness of healthcare personnel, strengthen patient communication and maintain high standards of service delivery. Such initiatives can contribute to improved patient satisfaction, stronger patient relationships and the long-term competitiveness of healthcare institutions.

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