IJAAR PUBLISHING®

Open Access Journal of Management Sciences Research | ISSN: 3027-1975
Vol. 4, Issue 1 (2026) | www.ijaar.org

Hospital Service Quality and Patient Satisfaction: Evidence from North Central Nigeria

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ABSTRACT:

This study examined the effect of service quality and patients' satisfaction in hospitals in North-central Nigeria. The study was anchored on Expectancy Disconfirmation Theory (EDT) postulated by Oliver 1980. Cross-sectional survey research design was adopted for the study. A study population of three hundred and eighty-four (384) was used for the study. Structural Equation Modelling (SEM) was used to analyze the collected data. Results obtained from the test of the formulated hypothesis revealed that a significant positive relationship exist between tangibility and patient satisfaction since ($\beta = 0.19$, $CR = 3.56$, $p < 0.001$); a significant positive relationship exist between assurance and patient satisfaction since ($\beta = 0.12$, $t = 2.24$, $p = 0.03$); a significant positive relationship exist between responsiveness and patient satisfaction since ($\beta = 0.18$, $t = 3.64$, $p < 0.001$); while reliability had no significant effect on patient satisfaction ($\beta = 0.10$, $t = 1.80$, $p = 0.07$); empathy also had no significant effect on patient satisfaction ($\beta = 0.10$, $t = 1.68$, $p = 0.09$), From the findings, the study concluded that tangibility, assurance and responsiveness directly predict patients; satisfaction. Thus, the study recommend that hospital prioritize modernizing physical facilities, medical equipment and the overall environment of care delivery and hospital should continuous professional development programs to ensure staff confidence, competence and courtesy in patients interactions.

Keywords: Service quality, tangibility, empathy, responsiveness, convenience, healthcare, patient, image, assurance.

Sende, F. T., Nkamnebe, A. D., Okeke, T. C. & Ebizie, P. I. (2026). Hospital Service Quality and Patient Satisfaction: Evidence from North Central Nigeria. *Open Access Journal of Management Sciences Research, 4*(1), 1-21.

1. INTRODUCTION

Service quality is widely recognized as the foundation of organizational competitiveness, particularly in the healthcare sector where service outcomes directly affect human lives. With globalization and the post-COVID-19 restructuring of health systems, the healthcare industry has expanded rapidly, making continuous improvement in service delivery indispensable (Akil & Ungan, 2022; Ogugua, Gbande & Ibrahim, 2023; Wulandari, Doddy & Indaryani, 2024). A healthy population is a driver of national productivity, and healthcare remains one of the most complex and financially demanding global sectors, accounting for nearly 10% of global GDP (Racoare et al., 2020; Bandara, Mel & Fernando, 2007; Padamata & Vangapandu, 2024). Given this complexity, the quality of healthcare services is critically important, as even minor lapses may result in severe outcomes (Ahmed et al., 2017; Singh & Dixit, 2020). The WHO emphasizes that quality care must be safe, effective, timely, efficient, equitable, and patient-centered (Swain & Singh, 2021). Despite these standards, Nigeria continues to face service quality challenges manifested through medical tourism, brain drain, and widening infrastructural gaps.

Patient satisfaction has emerged as a core performance metric in modern healthcare. As patients become more informed and assertive, the expectation for high-quality, responsive, and empathetic care continues to rise (Islam & Muhamad, 2021; Atsehe et al., 2024). Empirical studies link satisfaction to dimensions such as communication, empathy, responsiveness, and reliability (Umoke et al., 2020; Meesala &Paul, 2018). The SERVQUAL model (tangibility, reliability, responsiveness, assurance, and empathy) remains a widely used framework, though its suitability in developing contexts is still debated (Shafiq et al., 2017; Meesala & Paul, 2018).

An important but often overlooked construct in this relationship is hospital image, defined as the overall perception of a healthcare institution's reputation, infrastructure, personnel behavior, and branding (Nguyen & Leblanc, 2001; Coutinho et al., 2019). In healthcare, where information asymmetry is high, patients rely heavily on institutional image as a cognitive shortcut to judge service quality (Gürses & Kiliç, 2013). A positive hospital image can generate a halo effect, reducing the impact of minor service failures on overall satisfaction (Eckert, 2017; Rindasiwi & Pattyraine, 2024). Yet, despite its importance, hospital image remains underexplored in Nigeria.

The Nigerian healthcare system faces deteriorating infrastructure, shortages of skilled professionals, obsolete equipment, and long waiting times, all of which undermine service quality and satisfaction (Kamgba, 2023; Akinwumi et al., 2022). Nigeria's low ranking in WHO health system performance (WHO, 2023) further reflects systemic quality deficiencies. The broad objective of the study is to determine the extent of relationship that exists between Service quality and Patient Satisfaction in Hospitals in North-Central, Nigeria.

1.1 Research Hypotheses

In a bid to answer the questions raised by the researcher, the following research hypotheses were formulated by the researcher:

The following hypotheses are formulated for the study and they are formulated in null forms:

Ho_1: There is no significant positive relationship between tangibility and patient satisfaction in hospitals in North-Central Nigeria.

Ho_2: There is no significant positive relationship between assurance and patient satisfaction in hospitals in North-Central Nigeria.

Ho_3: There is no significant positive relationship between responsiveness and patient satisfaction in hospitals in North-Central Nigeria.

Ho_4: There is no significant positive relationship between reliability and patient satisfaction in hospitals in North-Central Nigeria.

Ho_5: There is no significant positive relationship between empathy and patient satisfaction in hospitals in North-Central Nigeria.

2. REVIEW OF RELATED LITERATURE

Dimensions of Healthcare service quality

This study adapts the dimensions of the traditional SERVQUAL model (Parasuranman et al. 1998)

Tangibility: Within the healthcare service quality literature, tangibility is a critical, albeit complex, dimension. It refers to the physical evidence of the service, encompassing infrastructure, equipment, hygiene, and the appearance of personnel and facilities. As Amporfu, Apanya and Amoako, (2022) noted that in the absence of a physical product, patients rely on these tangible cues to form quality assessments. Also, Choudhury and Singh (2021) added that the most important factor that impact on service quality dimension are physical facilities, equipment and appearance of personnel. Studies indicate that well-maintained environments, modern equipment, and clean, visually appealing surroundings positively influence patient perceptions and can psychologically aid the recovery process (Umoke et al., 2020).

However, the dimension's impact is not uniform. While factors like waiting areas and equipment are often highly rated, the neat appearance of staff may score lower (Umoke et al., 2020). Furthermore, a significant research divide exists. Some studies find tangibility to be a primary indicator of satisfaction, with noted performance gaps between public and private providers (Kwateng et al., 2017). Conversely, others, such as Meesala and Paul (2018), argue it has no significant effect on satisfaction, suggesting that non-physical dimensions like reliability and responsiveness are more impactful.

Reliability: In the healthcare SERVQUAL framework, the reliability dimension is foundational, concerning the ability to perform the promised service dependably and accurately. It is the cornerstone of trust, encompassing timely treatment, diagnostic accuracy, and the provision of correct information (Kwateng et al., 2017; Umoke et al., 2020). Studies indicate that within reliability, patients prioritise the confidentiality of their records, the technical knowledge of staff, and the consistency of treatment, often above the doctor's expertise (Singh et al., 2020). This dimension is critical as it directly fulfils the core service promise; for instance, short waiting times significantly boost satisfaction (Umoke et al., 2020).

Paradoxically, while some studies report patient satisfaction with reliability, it is frequently identified as the area requiring the most urgent improvement, with a pronounced trust deficit in service provision (Shafiq et al., 2017). This is evidenced by significant performance gaps between public and private providers (Kwateng et al., 2017). A telling inconsistency within healthcare systems is that while adherence to treatment protocols scores highly, maintaining

error-free records often scores the least, revealing a systemic weakness in administrative precision that can undermine clinical reliability (Umoke et al., 2020).

Responsiveness: The responsiveness dimension captures the willingness to help patients and provide prompt service, reflecting the system's and staff's receptiveness to patient needs (Amporfu et al., 2022). This encompasses timely communication, minimal waiting times, simplified procedures, and the readiness of health workers to listen (Singh et al., 2020; Umoke et al., 2020). Empirical findings present a complex picture. While some studies report high patient satisfaction with interpersonal aspects like a caregiver's willingness to listen, significant gaps exist in providing clear information about a patient's condition (Umoke et al., 2020).

A pronounced and consistent divide is evident between public and private providers, with the latter often demonstrating superior responsiveness due to better staff availability and streamlined processes (Kwateng et al., 2017; Amporfu et al., 2022). This performance gap is frequently attributed to systemic issues, including a lack of management focus on customer service training and weak administrative hierarchies (Shafiq et al., 2017). The dimension's direct impact on satisfaction is contested; some studies find it insignificant compared to core clinical factors, while others highlight that inefficiencies like long queues and cumbersome paperwork are primary patient concerns (Umoke et al., 2020; Singh et al., 2020). Thus, responsiveness remains a critical but inconsistently achieved aspect of the patient experience.

Assurance: Of the SERVQUAL dimensions, assurance is paramount in healthcare as it directly pertains to the knowledge, courtesy, and credibility of personnel and their ability to inspire trust and confidence. This dimension synthesizes technical competence, the accuracy of diagnosis and the skill of the health worker, with interpersonal elements of respect and communication that assure patients of their safety (Umoke et al., 2020; A. Singh et al., 2020). Empirical findings suggest patients highly value a provider's ability to instill confidence about treating their ailment and to offer clear instructions on follow-up care, though the thoroughness of the initial examination can be a recurring weakness (Umoke et al., 2020).

A significant and consistent performance gap exists between public and private facilities, with hospitals often outperforming health centers in this regard, indicating disparities in staff training or resource allocation (Kwateng et al., 2017; Amporfu et al., 2022). Ultimately, assurance is the bridge between technical service delivery and the patient's psychological comfort. It transcends mere competence to encompass the ethical imperatives of non-discrimination and zero ignorance, forming the bedrock of the therapeutic alliance and fundamentally influencing perceptions of care quality and safety (A. Singh et al., 2020).

Empathy: Within the healthcare SERVQUAL framework, empathy denotes the caring, individualized attention patients receive, reflecting the capacity of providers to understand and respond to their specific emotional and physical needs (Amporfu et al., 2022; Umoke et al., 2020). This dimension transcends mere courtesy, encompassing personalized concern, effective grievance resolution, and a genuine understanding of the patient's unique situation (A. Singh et al., 2020). Empirical findings reveal a complex picture: while patients often report satisfaction with the general attitude and willingness of health workers to attend to them, the concern shown to patients' families consistently scores the lowest, indicating a narrow application of empathetic care (Umoke et al., 2020).

A significant and consistent performance gap exists between public and private providers, suggesting systemic and cultural disparities in how individualized attention is prioritized and delivered (Kwateng et al., 2017). This implies that empathy is not merely an innate trait but a skill influenced by institutional ethos, training, and resource allocation. Therefore, while empathy is crucial for humanizing healthcare experiences, its effective implementation remains inconsistent, often limited to basic interactions rather than a deep, holistic understanding of patient and family needs, highlighting a critical area for quality improvement initiatives.

Brand Image:

Brand image is a critical construct in marketing and service management, often considered a key driver of consumer perception, satisfaction, and loyalty. Keller (1993, p.3) defines brand image as the "perceptions about a brand as reflected by the brand associations held in consumers' memory." These associations, which may be functional or symbolic in nature, form a consumer's overall impression of the brand. They encompass emotional responses, symbolic meanings, and the personal value consumers derive from a brand (Brodie, Whittome, & Brush, 2009). Hsieh et al. (2004) conceptualize brand image as an amalgamation of the feelings, impressions, beliefs, perceptions, and attitudes that are evoked in consumers' minds through their interaction with the brand. This reinforces the view that brand image is not formed in isolation, but is shaped by communication strategies such as advertising, sponsorship, and other marketing activities that facilitate consumer interpretation of brand meaning (Hoeffler & Keller, 2002). Further elaborating on the concept, Low and Lamb (2000) argue that brand image integrates both functional beliefs (e.g., reliability and performance) and symbolic beliefs (e.g., prestige or social identity), which together influence a consumer's evaluation of the brand. In the context of services, especially in sectors like healthcare, where trust and emotional connection are crucial, brand image becomes even more salient in shaping perceptions and expectations.

Closely linked to the concept of brand image is corporate image, which Brodie et al. (2009) defined as "stakeholders' beliefs, perceptions, feelings and attitudes towards an organisation." Corporate image is essentially the mental picture stakeholders form when they interact with or think about the organization. Deniz and Çimen (2023) emphasize that corporate image results from multiple touchpoints between the organization and its audiences—ranging from staff behavior and communication quality to physical infrastructure, service responsiveness, and media portrayal. These factors are particularly significant in hospital settings, where attributes such as hygiene, staff appearance, waiting times, technological advancement, and patient privacy contribute to the institution's overall image. Corporate image is heterogeneous; it can vary among different stakeholder groups. For instance, while one segment of society may hold a positive view of a hospital due to efficient service and good communication, another may harbor a negative opinion due to a single negative encounter or media report (Deniz & Çimen, 2023). This subjective nature underscores the complexity of managing brand and corporate image effectively.

A positive brand or corporate image offers significant strategic advantages. These include increased competitiveness, greater patient or consumer satisfaction and loyalty, stronger community relationships, and improved investor and employee confidence (Deniz & Çimen, 2023). In healthcare, in particular, studies show that perceived brand image is positively associated with patient satisfaction and loyalty (Rindasiwi & Pattyranie, 2024). Although Hamidah, Rokhman, and Kartikasari (2025) found that the correlation between brand image and loyalty remains consistently strong across studies.

Within the healthcare service quality literature, tangibility is a critical, albeit complex, dimension. It refers to the physical evidence of the service, encompassing infrastructure, equipment, hygiene, and the appearance of personnel and facilities. As Amporfu et al. (2022) note, in the absence of a physical product, patients rely on these tangible cues to form quality assessments. Studies indicate that well-maintained environments, modern equipment, and clean, visually appealing surroundings positively influence patient perceptions and can psychologically aid the recovery process (Umoke et al., 2020).

However, the dimension's impact is not uniform. While factors like waiting areas and equipment are often highly rated, the neat appearance of staff may score lower (Umoke et al., 2020). Furthermore, a significant research divide exists. Some studies find tangibility to be a primary indicator of satisfaction, with noted performance gaps between public and private providers (Kwateng et al., 2017). Conversely, others, such as Meesala and Paul (2018), argue it has no significant effect on satisfaction, suggesting that non-physical dimensions like reliability and responsiveness are more impactful.

2.1.7 Patient Satisfaction

Patient satisfaction is widely recognized as a critical outcome of healthcare service delivery and a key indicator of the quality of care (Agyapong et al., 2018; Atsehe et al., 2024). It is conceptualized as a patient's evaluation of the healthcare experience based on their expectations and perceptions, both cognitively and emotionally. Gustafsson et al. define satisfaction as the customer's overall evaluation of a product or service after experiencing it, while Padamata and Vangapandu (2024) view it as a primary tool for assessing healthcare quality outcomes. According to Deniz and Cimen (2023), satisfaction arises from a customer's response to the evaluation of the perceived discrepancy between prior expectations and actual performance. In the healthcare context, this discrepancy can be particularly important given the emotionally charged nature of medical encounters. Liljander and Strandvik (1994) describe satisfaction as an insider's perspective—an emotional response driven by personal experience and perceived value. Zineldin (2006) further elaborates that patient satisfaction involves both cognitive and affective evaluations formed across all episodes of care within the healthcare relationship.

Two main conceptualizations of satisfaction emerge in the literature: transaction-specific satisfaction and cumulative satisfaction (Radu et al., 2022; Asamrew, Endris and Tadesse, 2020). The former pertains to satisfaction derived from a single healthcare encounter, while the latter refers to an overall evaluation formed over multiple service episodes, which can influence patient loyalty and trust. Woo and Choi (2021) supports the cumulative view, noting that patients' satisfaction comprises various facets of the hospital experience, including technical and functional quality, infrastructure, interpersonal interaction, and environmental atmosphere. From a service evaluation standpoint, satisfaction reflects the emotional gap between what patients expect and what they perceive to have received (Shabbir, Malik, & Janjua, 2017).

Multiple factors predict patient satisfaction, such as the physician's communication skills and clinical knowledge, the physical environment (e.g., cleanliness, location, and modern equipment), interpersonal attributes, financial arrangements, and the efficiency of insurance systems (Agyapong et al., 2018). Meesala and Paul (2018) emphasize the need for responsiveness to patients' views, ongoing service improvement, and enhancement of doctor-patient relationships as pivotal contributors to satisfaction. Empirical studies provide nuanced insights into satisfaction patterns. For instance, Umoke et al. (2020) found that patients

reported the highest satisfaction with the empathy shown by providers and the lowest satisfaction with tangible aspects of care, such as physical infrastructure and surroundings.

The Nigeria Health Sector

The Nigerian health sector is a complex, multi-tiered system that operates under a mixed ownership and management structure involving public, private, and faith-based institutions. According to the 2014 National Health Act classification, they are classified into primary, secondary, and tertiary healthcare levels (Christian Connections for International Health; CCIH, 2021). The public healthcare system is administered across Nigeria's three levels of government: federal, state, and local government authorities (LGAs). Each tier has specific responsibilities. The federal government oversees tertiary care, formulates national health policy, regulates drugs, manages vaccines, conducts disease surveillance, and leads healthcare workforce education (Balogun, 2024; Aregbesola, 2024). The state governments manage secondary care services and provide technical support to LGAs. Meanwhile, primary health care (PHC) is primarily the responsibility of local governments, although the National Primary Health Care Development Agency (NPHCDA) under the Federal Ministry of Health provides substantial support due to LGAs' infrastructural and operational weaknesses (Aregbesola, 2024).

Health service delivery in Nigeria is significantly supported by the private sector, which accounts for approximately 60% of total healthcare service provision, compared to 40% by the public sector (Aregbesola, 2024). The private sector includes private-for-profit facilities, private-not-for-profit organizations, faith-based institutions, pharmacies, patent medicine vendors, traditional healers, and alternative medicine practitioners. Notably, faith-based and private facilities provide up to 70% healthcare services in rural and hard-to-reach areas, particularly through direct medical care and community-level interventions such as HIV/AIDS prevention, advocacy, and support programs (CCIH, 2021). Faith-based health facilities, although often grouped under the "private" classification, maintain a distinct operational philosophy, especially those guided by religious principles. These institutions are key in expanding access, particularly in underserved areas, and often integrate spiritual care into their service delivery. Despite their contribution, these facilities are frequently underrepresented in national health data and policy formulation (CCIH, 2021).

2.2 Conceptual Framework

Theoretical Framework

This study draws from the service quality model, expectation disconfirmation model and the stimulus organism response model**.**

Service Quality Model (SERVQUAL)

Understanding how patients perceive service quality in healthcare settings is foundational to evaluating their satisfaction and building strong hospital images. One of the most widely used models for conceptualizing and measuring service quality is the SERVQUAL model, developed by Parasuraman, Zeithaml, and Berry (1985; 1988). Originally introduced as a ten-dimensional framework under the acronym RATER, the model included: tangibles, reliability, responsiveness, competence, courtesy, security, credibility, communication, access, and understanding. However, subsequent refinement led to a more parsimonious and empirically validated five-dimensional model, SERVQUAL, which remains influential in service quality research across multiple sectors, including healthcare (Tripathi & Siddiqui, 2018).

The SERVQUAL model operates on an expectation-performance gap paradigm, which posits that service quality is a function of the difference between customers' expectations and their perceptions of actual service received. These five dimensions: Tangibles – the appearance of physical facilities, equipment, personnel, and communication materials; Reliability – the ability to perform the promised service dependably and accurately; Responsiveness – the willingness to help customers and provide prompt service; Assurance – the knowledge and courtesy of staff and their ability to instill trust and confidence; and Empathy – the provision of caring, individualized attention to customers (Parasuraman et al., 1988; Al-Neyadi et al., 2016).

Although the SERVQUAL model has been widely adopted in healthcare research globally (Farooq et al., 2018; Coulthard, 2004), it has not been without criticism. Scholars like Buttle (1996), Cronin and Taylor (1992), and Robledo (2001) have challenged its methodological assumptions, particularly its reliance on gap scores between expectations and perceptions, as well as its process-oriented nature. Critics argue that the model tends to focus on the delivery mechanism of the service rather than its technical outcomes—an important distinction in sectors like healthcare, where service performance is judged both by interpersonal experience and medical competence. Despite these critiques, SERVQUAL continues to be a valuable tool in healthcare settings, especially when adapted to contextual and industry-specific conditions. As Ladhari (2009) observed, while SERVQUAL has limitations, it still provides a strong foundation for service quality research and allows researchers to tailor the scale to better fit sector-specific demands. Wu and Ko (2013) further assert that its core dimensions serve as guiding pillars, though researchers must remain flexible in applying and refining the model based on empirical context.

In the context of this study, the SERVQUAL framework is essential for understanding how patients in Nigerian hospitals evaluate the quality of care they receive. Each dimension not only affects patient satisfaction directly but also indirectly through the influences of hospital's image. For instance, a hospital that consistently delivers reliable and empathetic service is more likely to be perceived as trustworthy and competent, thereby enhancing its image in the minds of patients.

Expectancy Disconfirmation Theory

This research work is anchored on the Expectancy Disconfirmation Theory (EDT; Oliver 1980; 2010).This theory remains one of the most widely applied theories in understanding customer satisfaction. At its core, EDT posits that customer satisfaction results from a comparison between prior expectations and perceived performance of a service or product (Oliver, 2010). If the perceived performance exceeds expectations (positive disconfirmation), the result is satisfaction. Conversely, if performance falls short of expectations (negative disconfirmation), dissatisfaction ensues (Schiebler, Lee, & Brodbeck, 2025).

Within the context of the Nigerian healthcare sector, particularly in public and private hospital services, EDT provides a robust framework to explain how patients form satisfaction judgments based on their expectations of healthcare delivery and the actual care received. According to Wang and Fan (2022), the theory assumes six essential relationships:

(1) a negative relationship between expectations and disconfirmation (Path A),

(2) a positive relationship between performance and disconfirmation (Path B),

(3) a positive relationship between disconfirmation and satisfaction (Path C),

(4) a positive link between expectations and performance (Path D),

(5) a direct relationship between performance and satisfaction (Path E), and

(6) the effect of expectations on satisfaction (Path F).

In healthcare, patients often approach treatment with a mix of empirical expectations (what they think will happen) and normative expectations (what they believe should happen). These expectations can relate to waiting times, communication, staff attitudes, clinical outcomes, or facility cleanliness. When service quality—measured through responsiveness, empathy, assurance, reliability, and tangibles—meets or exceeds these expectations, it results in positive disconfirmation and greater patient satisfaction (Hall et al., 2018; Jaber-Chehayeb, 2023). Conversely, if the service quality fails to meet these expectations, negative disconfirmation occurs, often leading to dissatisfaction and potential loss of trust in the hospital.

Stimulus Organism Response Theory

The Stimulus-Organism-Response (S-O-R) theory (Mehrabian and Russell 1974) provides a foundational framework for explaining how environmental stimulus influences individual responses through internal affective and cognitive processes. According to the theory, an external stimulus (S) triggers inner state of consumers, known as organism (O), which in turn elicits behavioral responses (R). In consumer behaviour context, a stimulus represents any environmental cue that triggers the emotional reactions of individuals toward that environment. Literature indicates that service quality attributes are considered as the elements of environmental cues (Mohammad & Alam, 2020).

In the context of healthcare, service quality —as perceived by patients— acts as the stimulus. This includes elements such as responsiveness, assurance, tangibles, empathy, and reliability, as captured by the SERVQUAL dimensions (Parasuraman et al., 1988). These service attributes represent the hospital environment and the interactions experienced by patients during service encounters. The organism refers to the hospital image, representing patients' internal evaluative perception of the hospital as a brand or institution. It encapsulates emotional and cognitive appraisals such as trustworthiness, professionalism, prestige, and overall reputation (Nguyen & Leblanc, 2001; Zablocki & Hutton, 2019). The response is patient satisfaction, representing the attitudinal and evaluative outcome of the healthcare experience. Satisfaction is seen as a consequence of both the perceived quality of care (stimulus) and the mental impression (organism) formed about the hospital (Ryu et al., 2012).

Empirical Review

Since the extant work on service quality model (SERVQUAL) PZB (1988, 1991), there has been an avalanche of literature on the topic. The context of these studies cut across service sectors including retailing, airline, financial institutions, restaurants, health care, service technologies etc. In the health sector, scholars have advanced many adaptations of the SERVQUAL model – e.g., HealQUAL, CIRMQUAL, LABQUAL – thereby creating a confluence of confusing models. This review traces some of the literature mainly in the health sector domain and identify gaps.

Airwashdh and Alishaq (2023) investigated the analytical study to assess the impact of health service quality on patient satisfaction in Hamad medical hospitals in Qatar: using SERVQUAL. The objective of the study was to assess the impact of the five dimensions of service quality on patient satisfaction and to determine which dimension had the greatest impact on patient satisfaction. Questionnaire was the data collection tool employed. A sample size of 400 patients was used for the study while univariable and multivariable linear

regressions were used to analyze the collected data. Findings revealed a statistically significant impact of health service quality on patient satisfaction.

Sumardika, Razak, and Yuaniko (2024) investigated the effect of healthcare service quality and price on patient satisfaction in Indonesia. The objective of the study was to analyze the influence of service quality and price on patient satisfaction at Kartika Husada Jatiash Hospital. Linear and multiple regression analysis were used to analyze the data. The findings revealed that service quality and price have a positive and significant effect at kartika husada jatiash hospital.

Atsehe, Tachin, Iorlumun, Agbecha, Atsehe and Kwaghgbah (2024) investigated service quality and patient satisfaction as predictors of loyalty among patients in public hospitals in Makurdi Metropolis in Nigeria. A sample size of 250 patients was used for the study. Questionnaire was the data collection tool used. Simple linear and multiple regression and hierarchical regression analysis were used to analyze the collected data. Findings revealed that service quality significantly predicted loyalty among patients and also that service quality and patient satisfaction are significant joint predictors of loyalty among patients when demographic variables are controlled.

Wulandari, Doddy and Indaryani (2024) measured the impact of healthcare service quality of hospitals on customer satisfaction in Indonesia. The objective of the study to was to assess the role of the quality of services offered by a hospital in predicting customer satisfaction. A sample of 380 was used for the study. Multiple regression was used to analyze the collected data. The findings that revealed an improvement in the quality of healthcare services shapes patient satisfaction and loyalty.

Pervaiz, Javed, Rajput, Shafique, and Tasneem (2024) investigated the impact of soft aspects of service quality (personnel trustworthiness, staff competency and social responsibility) on revisit intention through the mechanism of perceived empathy in Pakistan. Structural Equation Modelling (SEM) was used to analyse data collected from 562 respondents. The result showed increased family member empathy perception, which, in turn, improved inpatients' revisit intentions.

Bandara, Mel and Fernando (2024) examined the hospital services on patient satisfaction: with reference to a government hospital in Sri Lanka. The objective of the study was to examine the impact of hospital services on Patients' satisfaction. A sample size of 155 was used for the study. Questionnaire was the data collection tool employed while multiple regression analysis was used to analyze the data. Findings revealed that there is a significant impact of the independent variables on patients' satisfaction.

Rindasiwi and Pattyranie (2024) examined the relationships between hospital brand image, healthcare service quality, patient satisfaction, and patient loyalty in Tanzania. Using data from 160 respondents. A Partial Least Squares-Structural Equation Modeling (PLS-SEM) of the data showed that brand image and loyalty, brand image and healthcare service quality. Healthcare service quality and loyalty were all found to be positive and significant.

Padamata and Vangapandu (2024) investigated patients' and employees' perception of quality of care in Indian private hospitals. The authors used sampled 327 patients and 327 employees and analysed the data using Mann–Whitney U test. The result showed a significant difference in perceptions of quality of care between the patients and employees in the Indian hospitals. Employees have a strong positive perception of the medical care provided whereas the patients have less favourable perceptions for many quality indicators.

Kumar, Tikoria, and Vyas (2025) proposed a measurement tool in the form of an index to measure service quality of medical facilities in private residential higher educational institutes (HEI's) in India. Based on data collected from 632 faculty, staff and students and an exploratory and confirmatory factor analysis followed by DEMATEL, the findings revealed service quality of medical facilities as a multi-dimensional construct comprising of five dimensions namely trust, physical infrastructure, human resource, privacy & safety and communication.

Öz and Saygili (2025) examined the effect of trust communication with dentists and perceived service quality on patients' satisfaction in dental health services in Turkey. Data from 425 Dental Patients analysed using correlation analyses, and multiple linear regression analyses showed a positive and significant correlation between patient satisfaction and trust communication and between patient satisfaction and service quality perception in dental health services.

Datt, Gupta, and Misra (2025) sought to develop a model for assessing healthcare service quality (HSQ), and to evaluate the effectiveness of machine learning algorithms in predicting the quality of healthcare services in India. The authors proposed the CIRMQUAL model with 4 major dimensions i.e. clinical quality, infrastructural quality, relationship and managerial quality. These subdimension consist of 14 variables consisting of (quality of care, safety and security, skill and conduct, staff attitude, tangibles, quality of the atmosphere, patient rights, follow-up, communication, cost of treatment, availability of resources, accessibility, waiting time and services). They also found that application of machine learning algorithms has demonstrated significant accuracy in predicting SQ.

METHODOLOGY

The study adopted a cross-sectional survey research design to examine service quality and patient satisfaction in hospitals in North-Central Nigeria. This design allowed data to be collected from inpatients and outpatients at a single point in time without manipulating any variables, while ensuring confidentiality and enabling accurate description of the relationships among the constructs. Because the total population of hospital patients could not be determined, the Cochran (1977) formula for unknown populations was used to compute the sample size. Using a 95% confidence level ($z = 1.96$), estimated population proportion ($p = 0.5$), $q = 0.5$, and margin of error ($e = 0.05$), the required sample size was calculated as 384 respondents. This sample was then distributed equally across public, private, and mission hospitals within the North-Central zone, resulting in 128 questionnaires per hospital category. A multistage sampling technique guided the selection process. The North-Central zone was chosen for accessibility and concentration of eligible patients. Purposive sampling was applied to select three hospitals (one public, one private, and one mission) from each of the seven states, yielding 21 hospitals. These hospitals were chosen based on size, patient traffic, and ease of access for questionnaire administration. Within each hospital, inpatients and outpatients were selected purposively. Only in-patients who had stayed at least two days and outpatients who had visited the hospital more than once were considered, as they possessed adequate experience to evaluate service quality. Data were collected primarily through a structured questionnaire developed from the SERVQUAL model and modified to suit the context of the study. The instrument, titled Service Quality and Patient Satisfaction in Hospitals its use was justified by its cost-effectiveness, ability to reach a large and diverse population, and reduced researcher bias. The researcher and five trained assistants administered the instrument through face-to-face visits to the selected hospitals. Secondary data were obtained from relevant journals and credible online materials. Reliability and validity of the constructs were confirmed through Composite Reliability values above 0.70,

AVE values exceeding 0.50, and MSV values lower than the corresponding AVE, demonstrating internal consistency and discriminant validity. Data were analyzed using descriptive statistics for research questions and AMOS to test hypotheses using SPSS 27 and chosen for its predictive strength and suitability for complex models.

ANALYSIS AND INTERPRETATION

A total of 384 copies of questionnaire were distributed. After completion, 323 copies were returned usable. This represents 84.1%. 10 copies of the questionnaires representing 2.6% were returned unusable. While, 51 copies representing 13.3% were unreturned.

4.2 Demographic Profile of Respondent

Table 4.2.0 Demographic profile

Variable	Options	Frequency	Percent
Sex of Respondents	Male	127	39.4
	Female	196	60.6
Age of Respondent	18-25 years	32	9.9
	26-35 years	141	43.7
	36-50 years	136	42.1
	50 and above	14	4.3
Highest Qualification	SSCE	25	7.8
	OND/NCE	53	16.5
	B.Sc./HND	153	47.2
	Post Graduate	92	28.6
Occupation of respondent	Student	65	20.1
	Civil servant	85	26.3
	Private sector Employee	62	19.1
	Self-employed	111	34.3
Marital status	Single	76	31.1
	Married	244	67.6
	Divorced	3	1.2
Income per month	Below 150,000	104	32.2
	150,000-300,000	127	39.3
	300,000-500,000	78	24.1
	Above 500,000	14	4.3
	Total	323	100.0

Table 4.2.0 shows that of the 323 respondents, 127 (39.4%) were male and 196 (60.6%) were female, indicating a female-dominant sample, which aligns with trends showing that women often engage more in healthcare utilization. The age distribution reveals that most respondents were between 26–35 years (43.7%) and 36–50 years (42.1%), while 9.9% were aged 18–25 and only 4.3% were 50 years and above. This indicates that the study was dominated by individuals within the economically active brackets, who typically use healthcare services more frequently due to work and family demands.

Educationally, respondents were largely well-qualified: 47.2% held a B.Sc./HND, 28.6% a postgraduate degree, 16.5% OND/NCE, and only 7.8% SSCE, suggesting generally high

literacy levels that could influence how they assess service quality. In terms of occupation, the self-employed constituted the largest group (34.3%), followed by civil servants (26.3%), students (20.1%), and private-sector employees (19.1%), reflecting a balanced representation of major employment categories in Nigeria.

Marital status data show that 67.6% were married, 31.1% single, and 1.2% divorced, implying that family-related healthcare decisions may influence service utilization. Income distribution further shows that 39.3% earned ₦150,000–₦300,000 monthly, 32.2% earned below ₦150,000, 24.1% earned ₦300,000–₦500,000, while only 4.3% earned above ₦500,000, indicating a predominantly middle-income sample.

4.4 Measurement Model Evaluation

4.4.1 Model Fit Indices

Table 4.4.1 presents the model fit indices for the measurement model. The results show that the model fits the data very well, with all indices meeting or surpassing recommended thresholds. The chi-square/df ratio was 1.14, which falls well below the maximum threshold of 3, suggesting that the model demonstrates a strong parsimony of fit. Similarly, the CFI was 0.99, far exceeding the benchmark of 0.95, indicating excellent model fit (Hu & Bentler, 1999). The GFI = 0.93 and the AGFI = 0.91 both surpassed their respective cut-off points of 0.90 and 0.80, suggesting that the model explains a substantial proportion of the variance in the observed data. The RMSEA = 0.02 further confirmed the robustness of the model, as values below 0.05 are indicative of close fit. In addition, the p-close statistic (1.00), which tests the null hypothesis of close fit, was well above 0.05, providing additional evidence of excellent model performance. Finally, the SRMR = 0.0292 was also below the recommended maximum of 0.09, highlighting minimal residual discrepancies between observed and predicted correlations (Byrne, 2016). Taken together, these indices demonstrate that the hypothesized measurement model exhibits an excellent overall fit to the data. This indicates that the measurement items reliably capture the latent constructs under investigation and that the model is suitable for further structural analysis.

Table 4.4.1 Model fit

Measure	Threshold	Score
Chi-square/df	< 3 (good)	1.14
p-value	>.05	.05
CFI	>.95 (great)	.99
GFI	>.90 (traditional)	.93
AGFI	>.80 (great)	.91
RMSEA	< .05 (good)	.02
PCLOSE	>.05	1.00
Standardized RMR	<.09	.0292

4.5 Structural Model Results

Hypotheses Testing Results

Table 4.5.1 presents the structural model results for the hypothesized relationships between the five service quality dimensions, hospital image, and patient satisfaction. Each construct was examined individually to determine its effect on patient satisfaction, and the results are interpreted below.

Tangibility and Patient Satisfaction

H_{01}: There is no significant positive relationship between tangibility and patient satisfaction in hospitals in North-Central Nigeria.

Hypothesis 1 tests the relationship between tangibility and patient satisfaction. The result as shown in table 4.5.1 below showed that the p-value for the effect of assurance on patients' satisfaction is less than 0.05. Thus, we reject the null and accept the alternate. Therefore, tangibility has a positive and significant effect on patients' satisfaction ($\beta = 0.19$, CR = 3.56, $p < 0.001$), confirming H1. This finding suggests that the physical facilities, medical equipment, and appearance of the hospital significantly influence patients' satisfaction levels. Tangible cues in healthcare settings provide patients with visible evidence of quality, reinforcing their confidence in the services provided.

Assurance and Patient Satisfaction

H_{02}: There is no significant positive relationship between assurance and patient satisfaction in hospitals in North-Central Nigeria.

The second hypothesis, which proposed a positive relationship between assurance and patient satisfaction. To test H2, the result as shown in table 4.5.1 below showed that the p-value for the effect of assurance on patients' satisfaction is less than 0.05. Thus, we reject the null and accept the alternate. Hence, assurance has a positive and significant effect on patients' satisfaction ($\beta = 0.12$, $t = 2.24$, $p = 0.03$), supporting H2.This result indicates that patients' confidence in the knowledge, courtesy, and credibility of hospital staff has a significant impact on their overall satisfaction. Assurance reflects the level of trust patients place in healthcare providers, which is especially important in high-involvement services like healthcare where risk perceptions are high.

Responsiveness and Patient Satisfaction

H_{03}: There is no significant positive relationship between responsiveness and patient satisfaction in hospitals in North-Central Nigeria.

Finally, Hypothesis 3, which proposed a positive relationship between responsiveness and patient satisfaction. To test H3, the result as shown in table 4.5.1 below showed that the p-value for the effect of responsiveness on patients' satisfaction is less than 0.05. Thus, we reject the null and accept the alternate. Hence, responsiveness exhibited a significant positive relationship with patient satisfaction ($\beta = 0.18$, $t = 3.64$, $p < 0.001$), thereby supporting hypothesis 3. This implies that patients value the promptness and willingness of hospital staff to assist them and respond to their needs. Timely service delivery reduces patient anxiety and enhances their confidence in the care process.

Reliability and Patient Satisfaction

H_{04}: There is no significant positive relationship between reliability and patient satisfaction in hospitals in North-Central Nigeria.

To test Hypothesis 4, the result as shown in table 4.5.1 below showed that the p-value for the effect of reliability on patients' satisfaction is greater than 0.05. Thus, we accept the null and reject the alternate. Hence, reliability has no significant effect on patients' satisfaction ($\beta = 0.10$, $t = 1.80$, $p = 0.07$). Therefore, H4was not supported. Although the relationship was positive, it was not statistically significant at the 0.05 threshold. This suggests that while patients recognize the importance of reliability—defined as consistent and dependable service

delivery—it may not directly enhance satisfaction in the same way as tangibility, assurance, or responsiveness.

Empathy and Patient Satisfaction

H_{05}: There is no significant positive relationship between empathy and patient satisfaction in hospitals in North-Central Nigeria.

To test H5, the result as shown in table 4.5.1 below showed that the p-value for the effect of empathy on patients' satisfaction is greater than 0.05. Thus, we accept the null and reject the alternate. Hence H5 which showed that empathy does not have a positive and significant effect on patients' satisfaction ($\beta = 0.10$, $t = 1.68$, $p = 0.09$), was not supported. Despite the positive direction of the relationship, the effect was not statistically significant. This indicates that while patients may appreciate the individualized attention and care demonstrated by staff, empathy alone does not strongly predict satisfaction unless supported by broader institutional factors

Table 4.5.1 Hypotheses test result

Hypotheses			Estimate	S.E.	t.	P	Conclusion
Tangibility	⇨	Patient Satisfaction	.19	.05	3.56	.00	Supported
Assurance	⇨	Patient Satisfaction	.12	.05	2.24	.03	Supported
Responsiveness	⇨	Patient Satisfaction	.18	.05	3.64	.00	Supported
Reliability	⇨	Patient Satisfaction	.10	.05	1.80	.07	Not Supported
Empathy	⇨	Patient Satisfaction	.10	.06	1.68	.09	Not Supported
Hospital Image	⇨	Patient Satisfaction	.13	.07	1.92	.05	Marginally Supported

4.6 Discussion of Findings

Tangibility and Patient Satisfaction

The study found that tangibility had a significant positive effect on patient satisfaction ($\beta = 0.19$, $p < 0.001$). This demonstrates that physical facilities, medical equipment, and the hospital environment strongly shape patient evaluations of healthcare service quality. Tangibility is especially important in healthcare because patients often rely on visible cues to infer the quality of less tangible medical services. This result supports earlier findings by Andaleeb (2001), who emphasized the role of tangibles as a significant predictor of patient satisfaction in hospitals. Similarly, Senic et al. (2012) reported that tangibility, alongside promptness and personal relationships, significantly influenced patient satisfaction in student health clinics. In contrast, Umoke et al. (2020) found that empathy contributed more strongly to satisfaction than tangibles in Nigerian hospitals, suggesting that the relative importance of tangibility may differ across contexts.Overall, the finding aligns with the SERVQUAL framework (Parasuraman et al., 1988), which highlights tangibles as one of the five core service quality dimensions.

Assurance and Patient Satisfaction

Assurance also exhibited a significant positive relationship with patient satisfaction ($\beta = 0.12$, $p = 0.03$). This suggests that patients value the knowledge, courtesy, and trustworthiness of healthcare personnel, particularly because healthcare is a high-involvement service where professional competence directly affects perceived risk. This finding resonates with Chang et al. (2013), who found that interpersonal trust and service quality significantly influenced patient satisfaction in medical encounters. Similarly, Tripathi et al. (2018) ranked assurance as the second most important determinant of satisfaction after reliability, while Agyapong et al. (2018) confirmed that perceived service quality dimensions, including assurance, positively influenced satisfaction and behavioral intentions in Ghana. By contrast, Meesala and Paul (2018) reported that assurance did not significantly predict patient satisfaction in their path analysis of hospitals in India, suggesting possible cultural or contextual variations in how patients prioritize assurance. In the present study, assurance's significance underlines the importance of building trust and confidence through professional competence, courteous treatment, and transparent communication with patients.

Responsiveness and Patient Satisfaction

Responsiveness had a significant positive effect on patient satisfaction ($\beta = 0.18$, $p < 0.001$), confirming that patients highly value promptness and willingness of staff to provide assistance. This dimension reflects the timeliness of service delivery, staff attentiveness, and ability to address patient needs without unnecessary delays. The result supports the conclusions of Olorunniwo et al. (2006), who found responsiveness to be a central driver of satisfaction and behavioral intentions. Likewise, Fatima et al. (2017) emphasized responsiveness as one of the strongest predictors of patient satisfaction and loyalty in Pakistani hospitals. Responsiveness, therefore, emerges as a core service quality dimension in healthcare.

Reliability and Patient Satisfaction

Contrary to expectations, reliability did not have a significant direct effect on patient satisfaction ($\beta = 0.10$, $p = 0.07$). Although the relationship was positive, it failed to reach statistical significance, suggesting that patients may perceive reliability as a baseline expectation rather than a differentiating factor in satisfaction. This finding diverges from Tripathi et al. (2018), who ranked reliability as the most critical dimension of healthcare service quality, and from Meesala and Paul (2018), who found reliability to be among the strongest predictors of patient satisfaction. However, it aligns with Umoke et al. (2020), who observed that reliability was rated lower compared to empathy in Nigerian hospitals. A possible explanation is that patients assume reliability as a given in healthcare—when hospitals deliver consistent and accurate services, patients may take it for granted, but when reliability fails, dissatisfaction becomes pronounced. Thus, reliability functions more as a "hygiene factor" rather than a direct driver of satisfaction.

Empathy and Patient Satisfaction

The results indicated that empathy did not significantly predict patient satisfaction ($\beta = 0.10$, $p = 0.09$). This outcome contrasts with Abiodun (2010), who found empathy and access to services to be significant determinants of satisfaction in Nigeria, and Umoke et al. (2020), who reported that empathy contributed most to satisfaction compared to other SERVQUAL dimensions. However, it is consistent with Meesala and Paul (2018), who observed that empathy had no significant effect on patient satisfaction in their Indian sample. These mixed results suggest that the role of empathy may be context-dependent. In this study, empathy

appears to exert its influence indirectl, by shaping hospital image, rather than directly affecting satisfaction. This highlights the need for hospitals to not only deliver compassionate care but also institutionalize empathy into their brand reputation and service identity.

5. CONCLUSION AND RECOMMENDATIONS

Conclusion

The study investigated the relationship between healthcare service quality and patients' satisfaction. The SERVQUAL dimensions of reliability, asssurance, tangibility, empathy, and responsiveness were directly assessed against patient satisfaction, and indirectly through hospital image.

The study concludes that tangibility, assurance and responsiveness directly predict patients' satisfaction. Given that patient satisfaction is critically health outcome, health providers can achieve patient satisfaction when there is modern equipment, critical infrastructure, and neat environment. In addition, providing health services courteously and in a friendly manner and keeping patients appointment alongside handling patients complaints and requests swiftly increases their satisfaction. Patients' satisfaction is further reinforced when the hospital has a good reputation.

Recommendations

Based on the findings, the following recommendations are made:

1. Since tangibility had a significant direct effect on patient satisfaction, hospitals should prioritize modernizing physical facilities, medical equipment, and the overall environment of care delivery. Cleanliness, comfortable waiting areas, and well-maintained infrastructure provide patients with visible cues of quality and reliability. Management should therefore allocate resources to continuous procure state-of-the-art medical equipments, upgrade and maintain tangible facilities, as these directly enhance satisfaction and may differentiate hospitals in competitive environments.

2. The results highlight assurance as an important driver of satisfaction, both directly and through hospital image. Hospitals should therefore invest in continuous professional development programs to ensure staff demonstrate confidence, competence, and courtesy in patient interactions. Training in clear communication, ethical practice, and risk transparency will further reinforce patients' trust. These efforts will not only improve satisfaction but also strengthen the hospital's reputation as a credible and reliable healthcare provider.

3. Responsiveness emerged as a strong predictor of satisfaction. In the Nigerian context, where systemic inefficiencies sometimes lead to delays, enhancing responsiveness could serve as a major competitive advantage for hospitals. Accordingly, hospitals should redesign service delivery processes to minimize delays, reduce waiting times, and ensure prompt attention to patients' needs. Implementing triage systems, digital appointment scheduling, and real-time feedback platforms can help staff respond quickly to patients.

4. Although reliability did not significantly influence satisfaction, it remains a critical baseline expectation in healthcare. Hospitals must strengthen internal systems for consistency and accuracy, such as adopting standardized treatment protocols, digitizing medical records, and implementing quality assurance mechanisms. By doing so, hospitals can prevent dissatisfaction caused by lapses in reliability, even if reliability alone does not directly boost satisfaction.

Managers should treat hospital image as a strategic intangible asset by investing in branding, community engagement, and transparent communication. Efforts such as public health campaigns, patient education programs, and partnerships with community organizations can enhance the hospital's reputation. A strong hospital image not only amplifies the effect of service quality dimensions but also builds patient loyalty and positive word-of-mouth.

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