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Original Article

Determinants of Quality of Nursing Care Using a HealthQual Model and its Impact on Patient's Satisfaction and Loyalty

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Abstract

The healthcare sector is undergoing significant transformations, emphasizing patient-centered care and service quality. Patient satisfaction emerged as a key indicator of healthcare quality, extending beyond clinical outcomes to encompass interactions, facility conditions, and perceived empathy from healthcare providers, ultimately influencing patient loyalty. This study examines the factors affecting patient satisfaction within the HealthQual Model, with a particular focus on nursing care quality. Utilizing a cross-sectional approach, 150 inpatients from a private hospital were surveyed through Google Forms. The collected data were analyzed using Smart PLS to evaluate the relationships between these variables. The findings indicate that tangibility, empathy, safety, efficiency, and care improvements significantly impact patient satisfaction. Moreover, a strong positive correlation between patient satisfaction and loyalty was observed, reinforcing the proposed hypotheses. These results suggest that nursing care quality plays a critical role in shaping the overall patient experience and fostering long-term commitment to healthcare providers. This study provides valuable insights into the interplay between nursing care quality, patient satisfaction, and loyalty. The findings have practical implications for healthcare administrators and practitioners, underscoring the need for targeted improvements in nursing services to enhance patient experiences and strengthen relationships with healthcare providers.

Keywords: Healthcare Management, Nursing Quality, Healthcare Quality, Healthcare Services. ServQual., Nursing Care, Healthcare Strategy.

Introduction

Background

Quality in healthcare is defined by timely, efficient, patient-centered, safe, effective, and equitable services (Matera *et al*., 2017). As healthcare systems evolve to meet diverse patient needs, quality perception significantly influences customer satisfaction, service utilization, and loyalty. Rising costs and competition have made improving patient satisfaction essential for controlling expenses and enhancing service quality. Patients now actively seek high-quality care, with continuity of care playing a key role in satisfaction (Emmanuel *et al*., 2024; Stavropoulos *et al*., 2022). Nurses are central to deliver quality care, combining professional expertise with empathy and responsiveness (Digant *et al*., 2012; Siddiqui *et al*., 2023). The American Nurses Association (ANA) defines quality nursing care as aligning with emerging knowledge to improve patient outcomes. Research shows that satisfied patients are more likely to adhere to treatments and remain loyal to providers (Rostami *et al*., 2018). To assess and improve nursing care, Lee *et al*. (2017) introduced the "HealthQual" model, incorporating empathy, tangibles, safety, efficiency, and care improvement. This model provides a structured framework for enhancing patient satisfaction and loyalty, crucial for healthcare providers navigating an increasingly competitive landscape.

Significance of the Problem

In healthcare organizations, maintaining and enhancing patient satisfaction is a paramount concern, as it is intricately linked to the quality of care and overall patient experiences. To address this imperative challenge effectively, it is essential to define, measure, and comprehensively understand the specific dimensions of patient satisfaction, Empathy, Tangible, Safety, efficiency and improvement in care service. According to Kwame *et al*. (2021), while providing care to patient's needs and their caregiver needs also generate positive outcome towards the patient and hospital and promote patient centered care approach. Furthermore, the aspect of care services' ongoing improvement draws attention to how dynamic the healthcare industry is. Establishing a culture of ongoing learning and improvement is vital for organizations, as is accepting patient feedback and utilizing it to drive constructive transformation. In addition to addressing existing issues, this dimension puts healthcare organizations in a position to adjust to the changing requirements and expectations of their patients.

Objective of the Study

This research is intended to investigate the impact of nursing care related quality measures using the HealthQual Model on the patients' satisfaction. It also investigated the impact of patient satisfaction of the nursing care services on their loyalty.

Literature Review

Characteristics of Quality in Healthcare

Healthcare quality is said to be the provision of patient-centered, timely, efficient, safe, effective, and equitable services (Donabedian *et al.*, 1979). It is aligned with patient expectations, societal norms, and professional standards (Mora *et al*., 2019). A continuous improvement framework helps balance risks and benefits, ultimately benefiting both individuals and society

Quality Service and Patient Satisfaction

The link between healthcare quality and patient satisfaction is crucial (Rahnamay *et al*., 2023). Patient satisfaction, a multidimensional construct, arises from comparing healthcare experiences with expectations (Prakash *et al*., 2010). Quality care not only meets standards but also addresses patients' physical, emotional, and psychological needs. Empathy, clear communication, and a culturally sensitive approach foster respect, confidence, and trust in healthcare (Nemati *et al*., 2020). Enhanced service quality strengthens patient trust, loyalty, and institutional reputation. Satisfied patients are more likely to comply with treatment and engage in their care, improving health outcomes. Studies, such

as one conducted at Black Lion Specialized Hospital in Ethiopia, assess patient satisfaction to refine service delivery and better meet patient needs (Nebsu *et al.*, 2015). Ultimately, satisfied patients advocate for healthcare institutions, reinforcing credibility and trust.

Quality Nursing Services and Patient Satisfaction

The most essential component of production and operations management is quality Practical nursing care has a direct correlation with patients' general well-being and positive health results (Azam *et al.*, 2012). Therefore, considering quality may result in lower costs, increased output, and long-term stability for organizations. Quality care encompasses many different healthcare services, but the provision of patient-centered and evidence-based therapy is mostly reliant on high-quality nursing care. (Karaca *et al*., 2019). An essential part of any endeavor to raise the standard of patient care overall is measuring the quality of nursing care. The perceived quality of interaction between patients and nurses had been found to be associated with patient satisfaction. As healthcare organizations commit to meeting and exceeding established nursing quality benchmarks, patients are more likely to receive high-quality, personalized care that aligns with their needs and expectations, ultimately leading to increased satisfaction and a positive overall healthcare experience. The quality of healthcare services is a measure that may determine the components of that quality that need to be changed to improve patient satisfaction. Healthcare service quality is an indicator that can discover those aspects of service quality that require modification to enhance patient satisfaction.

Quality and HEALTHQUAL Model with Multi-Items Scale

Healthcare is a complex service industry requiring systematic approaches to improve quality. The Lean Six Sigma (LSS) DMAIC (Define, Measure, Analyze, Improve, Control) methodology helps healthcare organizations enhance service performance, reduce waste, and improve patient satisfaction. Various models assess service quality, with SERVQUAL being widely used. However, SERVQUAL struggles to measure healthcare quality due to its unique determinants-accessibility, cost, treatment level, and health outcomes. To address this, the Joint Commission International Accreditation (JCIA) developed the HEALTHQUAL instrument. SERVQUAL, proposed by Myers *et al*. (1969), focused on continuity, care quality, efficacy, and accessibility. Donabedian *et al.* (1980) expanded quality assessment to include legitimacy, optimality, acceptability, equity, effectiveness, and efficiency. Later studies (Kathryn *et al*., 1994; Martin *et al*., 1998) identified four service quality criteria: Personal Attention, Reliability, Tangibles, and Convenience. Puay *et al.* (2000) emphasized the growing need for hospitals to enhance service quality across six dimensions: tangibility, reliability, assurance, responsiveness, empathy, accessibility, and affordability. Nurses play a vital role in building trust in healthcare institutions. Nemati *et al*. (2020) applied the HEALTHQUAL methodology to compare hospital service quality in Iran's university and non-university hospitals, emphasizing its relevance in nursing research.

Empathy and Patient Satisfaction

Empathy is the ability to understand and share another person's emotions and experiences (Rosaria *et al*., 2019). It goes beyond awareness, fostering deep emotional connection and understanding (McMillan *et al*., 2010). In nursing, empathy is crucial for recognizing patients' needs, concerns, and emotions, forming the foundation of compassionate care (Fields *et al*., 2004). The nurse-patient relationship thrives on empathy, active listening, and clear communication, fostering trust and comfort (Hojat *et al*., 2015). Effective interpersonal skills enhance collaboration and holistic patient care. Patients who feel heard, respected, and valued report higher satisfaction with healthcare interactions. Additionally, nurses' expertise, attentiveness, and responsiveness significantly impact care quality. Their ability to educate, provide emotional support, and involve patients in decision-making enhances positive healthcare experiences. These factors not only improve patient satisfaction but also contribute to better health outcomes and hospital loyalty. By prioritizing empathy in nursing care, healthcare institutions can elevate service standards and strengthen patient trust and engagement.

H_1: *There is an impact of empathy related to nursing services on patient satisfaction.*

Tangible and Patient Satisfaction

The tangible nature of healthcare as a tool is essential in fostering customer happiness in general (Sahoo *et al.*, 2016). A health scape's tangibility is a multifaceted characteristic that encompasses specific components such as furnishings, amenities, food, medications, staff attire, color, music, scent, arrangement, and so forth. These concrete factors are considered in the context of health so that they influence a service recipient's actions. (Warburg, *et al*., 2015). According to the researcher's overall perception of service quality and patient satisfaction was shown to be significantly impacted by nurse tangibles, hospital grounds and staff tangibles, and room and cleaning etiquette.

H_2: *There is an impact of tangible related to nursing services on patient satisfaction.*

Safety and Patient Satisfaction

The Joint Commission International (JCI) Accreditation ensures healthcare quality and patient safety. Safety, defined as minimizing risks that could cause harm (Pierre *et al*., 2001), is crucial for patient well-being. Preventing medical errors through proper drug administration, infection control, and effective communication reduces error rates and enhances hospital safety. Safe nursing practices foster security and well-being, directly impacting patient satisfaction (Kalsoom *et al*., 2022). Nurses' clinical skills and competencies are essential for ensuring safety, as they continuously monitor and assess patient conditions to prevent complications. A strong focus on patient safety promotes a patient-centered approach, addressing physical, emotional, and social needs. When safety is prioritized, patients feel more secure and develop trust in their care providers, strengthening overall satisfaction. Ultimately, integrating safety into nursing protocols not only improves healthcare outcomes but also enhances patient confidence and loyalty to the healthcare institution.

H_3: *There is an impact of safety related to nursing services on patient satisfaction.*

Efficiency and Patient Satisfaction

Efficiency is the optimal use of resources to maximize quality while minimizing waste (Gok *et al*., 2013). In nursing, efficiency ensures timely, well-coordinated care, directly impacting patient satisfaction. Patients prefer streamlined procedures that reduce wait times, enhance communication, and promptly meet their needs (Sohail, 2019). Over the past two decades, hospitalists have played a crucial role in reducing costs and hospital stays, improving overall efficiency. Conversely, inefficiencies-such as long wait times and poor coordination-negatively affect patient satisfaction (Miriam *et al.*, 2010). Today, patients consider efficiency, quality, and satisfaction when selecting healthcare providers. Hospitals that deliver high-quality care efficiently at a reasonable cost can maintain financial sustainability. Efficient nursing services enhance patient trust, ensuring positive experiences and better outcomes. Ultimately, the link between efficiency and patient satisfaction highlights the importance of well-managed healthcare systems in delivering timely and effective care

H_4: *There is an impact of efficiency related to nursing services on patient satisfaction.*

Improvements in Nursing Services and Patient Satisfaction

Patient satisfaction and care quality are closely related, which reflects the significant influence that quality improvements have on people's experiences in healthcare settings. Patient satisfaction is closely correlated with improvements in treatment, as seen by programs like improved clinical practices, simpler systems, and increased communication (Long *et al*., 2003). One of the biggest challenges facing any nursing service is getting nurses to adopt and incorporate best practices and ongoing quality improvement into their daily work. Patients feel more confident and trust in the healthcare system when they see a commitment to ongoing improvement. In addition to focusing on clinical efficacy, efforts to enhance care also consider factors like attentiveness to individual patients, clear communication, and promptness in meeting their requirements. These enhancements influence patients' satisfaction

ratings by making their whole experience more favorable. When patients believe their care is always being improved to match changing needs, they are more likely to report pleasure.

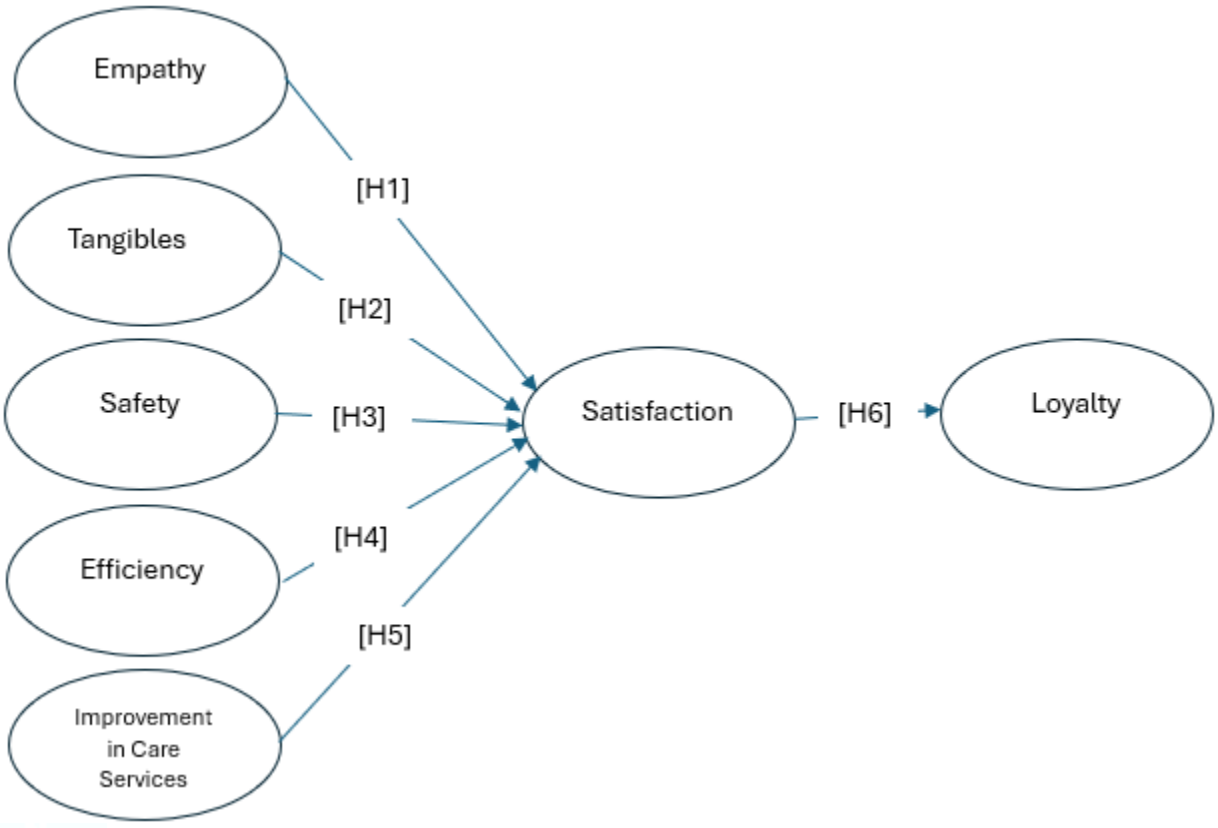
H_5: *There is an impact of improvement in care to nursing services on patient satisfaction*

Satisfaction and Patient Loyalty

Patient satisfaction is a multifaceted feature that is a crucial important indicator of healthcare delivery. It is defined as a consumer's perspective and attitude towards their whole experience while receiving care. (Prakash, *et al*., 2010). Patient satisfaction is a crucial and often used metric to assess the standard of medical customer service. Clinical results, patient retention, and negligence all impacted patient satisfaction. (Nemati *et al*. 2020) High-quality hospital services may boost patient and staff happiness as well as patient loyalty, which in turn motivates patients to tell their friends and acquaintances about these medical facilities. Thus, taking quality into account may lower expenses, boost productivity, and offer long-term stability in businesses.

H_6: *There is a positive relationship between patient satisfaction and patient loyalty.*

Figure 1
Conceptual Framework



Materials and Methods

Study Design

This research has adopted a quantitative research strategy to study the underlying phenomenon of nursing quality and patients' satisfaction, as per the guidelines of Wang *et al*., (2020) and Aspers *et al*., (2019). It is a cross-sectional study examining information from a population at a particular period. Moreover, a non-probability judgmental sampling technique will be performed (Kwasniewski *et al*., 2020). The sample size was calculated, and a total of n= 155 participants will be recruited based on a 50% proportion (for maximum sample size) and at a 95% confidence level with a bound of error of 5%. (Lakens *et al*., 2022). The sample size for this research of hospital patients is 155. A minimum sample size criterion of $N \geq 50+m$, where the number of predictors is, was proposed by (Harris *et al*., 1975). Power analysis that considers the effect size, significance level, and a 5:1 observation to variable ratio is advised. With 31 indicators in the current investigation, this ratio yields a minimal sample size of $31 \times 5 = 155$. The structured survey instrument was administered through a self-administered, and online survey. Structural Equation Modeling PLS-SEM was used to analyze the given phenomena and demographics were analyzed through SPSS 26.

Study Population/Settings

This study was conducted in private tertiary care hospitals in Karachi city which is the biggest and most metropolitan city in the country. Data was collected from patients admitted to the Medical, Surgical and Gynae ward.

Study Parameters

The study parameters outline an investigation into the relationship between independent variables related to nursing care (empathy, tangibles, safety, efficiency, and improvement in care) and dependent variables, namely patient satisfaction and loyalty. In this context, empathy represents the ability of nursing staff to understand and connect with patients emotionally; tangibles encompass the physical and tangible aspects of care delivery; safety reflects the measures taken to ensure patient well-being; efficiency pertains to the timeliness and effectiveness of care processes, and improvement in care captures the ongoing efforts to enhance the quality of healthcare services. Patient satisfaction, as a dependent variable, measures the overall contentment of patients with the care they receive. Loyalty, in this context, may indicate the likelihood of patients continuing seeking care within the same healthcare system or from the same nursing staff. By exploring these parameters, this study aims to contribute valuable insights into the factors influencing patient satisfaction and loyalty, ultimately contributing to the enhancement of nursing care quality and patient experiences.

Ethical Considerations

For ethical considerations, all participants were invited to give informed consent before the questionnaire. The informed consent consisted of information regarding the study objectives and purpose. Along with this, the privacy and confidentiality of the participants' data were ensured. Regarding the ethical considerations, the data collection was started after obtaining approval from the Ethical Review Committee of the concerned medical units. The soft copies of the data were stored in cloud storage with password protection, and all data was shifted to the Google questionnaire scale. Through all these measures, the privacy and confidentiality of the participants were fully ensured.

Measures and Scales

A standardized structured questionnaire adapted from HEALTHQUAL a multi-item scale for assessing healthcare service quality (Nemati, *et al*., 1980). Comprising closed-ended questions, was used to gather the information. This instrument had shown strong validity and reliability, with the Test-Retest Correlation Coefficient being .99; and Cronbach's alpha= 0.91. Each item of the questionnaire was scored from "1" strongly disagree and "5" being strongly agree. There are two primary components to the poll that were used in this investigation. The first section explores six essential elements, concentrating on demographic data: Gender, Age, Education, Hospital Stay Length, Marital Status,

and Income Level are the six factors to consider. Component B, the second component, is devoted to measuring patient views regarding several aspects of the quality of healthcare services. It is broken down into five categories that assess five different areas of care services: safety, efficiency, improvement, empathy, and tangible aspects. A series of closed-ended questions ranging from 1 -5 strongly disagree to agree strongly. Aspects like nurses' attitudes, communication, and interpersonal connections are evaluated in the section on empathy. The tangible factors examine the perceived level of security, expertise, amenities, and hygiene. The Efficiency portion examines opinions toward the use of medications, appropriateness of treatments, justifiable medical costs, and measures taken to reduce discomfort. Evaluations of appropriateness, medical condition improvement, disease prevention explanations, and nursing activities are all part of the care service improvement process. Contentment with nurses, received treatment, hospital quality, and support are measured in the last parts, Satisfaction and Loyalty, respectively. Other factors measured include emotions of ease, trust, relief, positive word-of-mouth, and referrals to others. The purpose of the questionnaire is to thoroughly evaluate the various facets of patient satisfaction and the quality of healthcare services.

Results and Findings

Demographic Profile of Respondents

Table 1

Demographic Data

Category	Items	Frequency	Percent
Gender	Male	61	48.8
	Female	64	51.2
Age	20 yrs 30yrs	33	26.4
	31yrs to 40 yrs	32	25.6
	41 yrs to 50 yrs	42	33.6
	51 yrs above	18	14.4
Hospital Stay	1 day	41	32.8
	2 days	42	33.6
	3 days	33	26.4
	More than 3 days	9	7.2
Marital Status	Single	30	24.0
	Married	78	62.4
	Divorced	10	8.0
	Widow	7	5.6
Education Background	None	10	8.0
	Primary	21	16.8
	Secondary	46	36.8

	High School	27	21.6
	Postgraduate	21	16.8
Income Level	30,000 to 50,000	65	52.0
	51,000 to 70,000	41	32.8
	71,000 to 90,000	16	12.8
	91,000 TO Above	3	2.4

According to the above population's demographic research, women make up 51.2% of the population, more than males (48.8%). In terms of age, the largest group is those who are 41–50 years old (33.6%), followed by those who are 31–40 years old (25.6%), and the smallest group is made up of people who are 51 years of age and over (14.4%). When it came to hospital stays, most people (33.6%) stayed for two days, one-day stays (32.8%) came in second, and just 7.2% stayed for more than three days. According to marital status, the majority are married (62.4%), followed by widows (5.6%), singles (24.0%), and divorced people (8.0%). Secondary education is most common (36.8%), followed by high school (21.6%), postgraduate education (16.8%), elementary education (16.8%), and a minority having no schoo16.8%), while a minority (8.0%) has never attended school. When it comes to income brackets, the majority (52.0%) are in the range of 30,000 to 50,000, followed by 32.8%), 12.8% are in the range of 71,000 to 90,000, and the lowest proportion is in the range of 91,000 and above

Analysis of Measurement Model

Quality assessment criteria in research are standards or guidelines used to evaluate the rigor, validity, and reliability of a study (Caballero et al., 2009). The PLS-SEM output of the quality measures including reliability and validity statistics are exhibited in Table 4.2.

Table 2

Reliability and Validity

	α	**CR**	**AVE**
Emp	0.754	0.833	0.580
Tang	0.754	0.833	0.580
Saf	0.777	0.861	0.616
Eff	0.963	0.973	0.900
Imp care	0.831	0.889	0.669
SATIS	0.888	0.923	0.751
Loy	0.906	0.930	0.726

[HealthQual Dimensions: Empathy (Emp), Tangibility (Tang), Safety (Saf), Efficiency (Eff), Improved Care (Imp care)], Patient Satisfaction (SATIS) Patient loyalty (Loy). Cronbach Alpha (α) > 0.7, Composite Reliability (CR) > 0.7, Average Variance Extracted (AVE) > 0.5

The reliability and validity of the measurement model were assessed using Cronbach's Alpha (α), Composite Reliability (CR), and Average Variance Extracted (AVE) (Paul, *et al*., 2012). The results indicate that all constructs meet the recommended thresholds: Cronbach's Alpha (α) > 0.7 (Nunnally & Bernstein, 1994), Composite Reliability (CR) > 0.7 (Hair *et al*., 2022; Sarstedt *et al*., 2021), and AVE > 0.5 (Fornell & Larcker, 1981). Specifically, the α values range from 0.754 (Empathy, Tangibility) to 0.906 (Loyalty), confirming internal consistency. CR values exceed 0.7 for all constructs, indicating strong construct reliability. The AVE values range from 0.580 to 0.900, surpassing the minimum threshold of 0.5 (Cheung, *et al*., 2023; Hair *et al*., 2019; Sarstedt et al., 2021), ensuring convergent validity. Notably, Efficiency (Eff) demonstrates the highest reliability and validity (α = 0.963, CR = 0.973, AVE = 0.900), while other HealthQual dimensions, Patient Satisfaction, and Loyalty also exhibit robust psychometric properties. These results confirm the appropriateness of the measurement model for assessing healthcare service quality and patient-related outcomes (Collins, *et al*., 2006).

Discriminant Validity

According to, "Discriminant validity is shown when each measurement item correlates weakly with all other constructs except for the one to which it is theoretically associated (Gefen & Straub *et al*., 2005; Cheung, *et al*., 2023). Heterotrait and Monetarist Ratios (HTMT) and Fornell-Lacker criterion were assessed to measure the discriminant validity of the measure (Hamid *et al*., 2017) as shown in Tables. The Heterotrait-Monotrait (HTMT) ratio with values below the recommended threshold of 0.85 (Henseler *et al.*, 2015) indicating adequate differentiation between constructs. Most constructs meet this criterion, except for Efficiency–Loyalty (0.928), Efficiency–Improved Care (0.924), and Safety-Satisfaction (0.905), suggesting potential discriminant validity concerns. Other HTMT values range from 0.316 to 0.838, supporting construct distinctiveness. These findings indicate that while the model demonstrates reasonable discriminant validity, certain constructs exhibit high intercorrelations, warranting further examination to ensure theoretical and empirical differentiation.

Table 3

Heterotrait and Monetarist Ratios (HTMT)

	Eff	Emp	Impcare	Loy	SATIS	Saf	Tan
Eff							
Emp	0.363						
Impcare	0.924	0.494					
Loy	0.928	0.316	0.838				
SATIS	0.809	0.719	0.881	0.746			
Saf	0.896	0.437	0.788	0.806	0.905		
Tan	0.554	0.547	0.582	0.663	0.830	0.694	

The Fornell-Larcker criterion confirms discriminant validity, as the square root of AVE (diagonal values) exceeds inter construct correlations (Fornell & Larcker, 1981). However, high correlations between Efficiency–Loyalty (0.869) and Efficiency–Improved Care (0.828) suggest potential overlap. Most constructs meet the threshold, supporting the model's validity with some areas requiring further assessment.

Table 4

Fornell-Larcker Criterion

	Eff	Emp	Impcare	Loy	SATIS	Saf	Tan
Eff	0.949						
Emp	0.249	0.762					
Impcare	0.828	0.363	0.818				
Loy	0.869	0.233	0.726	0.852			
SATIS	0.759	0.598	0.774	0.686	0.867		
Saf	0.793	0.355	0.654	0.703	0.773	0.785	
Tan	0.544	0.374	0.504	0.605	0.749	0.605	0.791

Predictive Relevance

In the Table 4 predictive relevance of the model was assessed using R-square (R^2) values, which indicate the proportion of variance explained by the independent variables. Patient Satisfaction demonstrates a high R^2 value of 0.869 (adjusted R^2 = 0.863), suggesting that the model explains 86.9% of the variance in satisfaction, indicating strong predictive power (Henseler *et al*., 2015). Similarly, Patient Loyalty has an R^2 value of 0.471 (adjusted R^2 = 0.467), implying that 47.1% of its variance is explained by the predictors. While this represents moderate predictive strength (Sarstedt *et al*., 2021), it suggests that additional factors may contribute to patient loyalty beyond the scope of the model. Overall, the results confirm that the model has substantial explanatory power, particularly for Patient Satisfaction.

Table 5

R-Square and Adjusted R-Square

	R-square	**R-square adjusted**
Patient Loyalty	0.471	0.467
Patient Satisfaction	0.869	0.863

Structural Model Assessment

A bootstrapping of 5000 sub-samples was performed in the Smart PLS 4 to assess the hypothesized relationships of the model.

Table 6

Path Coefficients

Hypotheses		Path Coefficients	Standard deviation	T statistics	P value	Decision
H1	**Emp->SATIS**	0.277	0.056	4.936	0.000	Supported
H2	**Tan->SATIS**	0.314	0.060	5.193	0.000	Supported
H3	**Saf->SATIS**	0.199	0.066	3.009	0.003	Supported
H4	**Eff->SATIS**	0.134	0.077	3.142	0.000	Supported
H5	**Imp care-> SATIS**	0.275	0.067	4.096	0.000	Supported
H6	**SATIS -> Loy**	0.686	0.055	12.458	0.000	Supported

H_1 Empathy Patient Satisfaction: The relationship between efficiency and patient satisfaction is supported with (β = 0.277, t-statistics = 4.936, $p < 0.05$). Therefore, it is concluded that there is a statistically significant impact of empathy on patient satisfaction.

H_2 Tangible and Patient Satisfaction: The relationship between tangible and patient satisfaction is supported with (β = 0, 314 t-statistics = 5.193, $p < 0.05$). Therefore, it is concluded that there is a statistically significant impact of tangible on patient satisfaction.

H_3 Safety and Patient Satisfaction: The relationship between safety and patient satisfaction is supported with (β = 0.199, t-statistics = 3.009, $p < 0.05$). Therefore, it is concluded that there is a statistically significant impact of safety on patient satisfaction.

H_4 Efficiency and Patient Satisfaction: The relationship between efficiency and patient satisfaction is supported with (β = 0.134, t-statistics = 3.134, $p < 0.05$). Therefore, it is concluded that there is a statistically significant impact of efficiency on patient satisfaction.

H_5 Improve care and Patient Satisfaction: The relationship between Improve care and patient satisfaction is supported with (β = 0.275, t-statistics = 4.096, $p < 0.05$). Therefore, it is concluded that there is a statistically significant impact of Improve care on patient satisfaction.

H_6 Patient Satisfaction and loyalty: The relationship between patient satisfaction and loyalty is supported with (β = 6886, t-statistics = 12.458, $p < 0.05$). Therefore, it is concluded that there is a statistically significant impact of efficiency on patient satisfaction. Overall, the T-statistics indicate that relationships are statistically significant, supporting the impact of the independent variables Empathy, Tangible Safety, Efficiency and Improvement care on Satisfaction and the impact of Satisfaction on Loyalty. The P-values being less than 0.05 further reinforce the statistical significance of these relationships in research study.

Discussion

This study aimed to assess patient satisfaction with nursing care, considering five key dimensions of health-related quality: empathy, tangibility, safety, efficiency, and improvement in care services. Each dimension plays a significant role in shaping patient satisfaction, which, in turn, leads to increased loyalty toward the healthcare provider. Evaluating nursing care from the patient's perspective, though challenging, provides essential insights into the overall standard of care delivered during hospitalization (Azizi *et al*., 2012). Patient satisfaction is a critical measure of hospital care quality and correlates with greater adherence to treatment regimens. The statistical analysis conducted in this study reveals that all five dimensions positively influence patient satisfaction. Among them, tangibility shows the strongest impact. The coefficient value of 0.314 suggests a positive correlation between tangible aspects of nursing care and patient satisfaction. A higher T-statistics value of 5.193 confirms the statistical significance of this relationship, with a P-value of 0.000 further supporting this finding. This underscores the importance of tangible features in enhancing patient satisfaction.

Empathy, the second dimension examined, also correlates positively with patient satisfaction. The coefficient value of 0.277 indicates a meaningful link between empathic care and patient contentment. Previous research has shown that empathy in healthcare consistently leads to better patient outcomes (Goodarzi *et al*., 2015). The standard deviation of 0.282 highlights some variability in the data, but the overall positive correlation suggests that empathic communication has substantial benefits for patients' well-being and satisfaction. This finding advocates for a continued focus on developing empathic competencies among healthcare professionals. The improvement in nursing care is another vital factor contributing to patient satisfaction. The coefficient value of 0.275 demonstrates a positive relationship between care enhancement and patient happiness. A standard deviation of 0.279 reflects the variability in the data, while a T-statistics value of 4.096 confirms the statistical significance of this association. This finding aligns with existing literature, which emphasizes the importance of continuous improvements in patient-caregiver interactions and care quality (Azizi *et al*., 2012). Safety, a fundamental element of healthcare quality, also influences patient satisfaction. However, its impact appears somewhat less pronounced compared to other factors. With a T-statistics value of 3.009 and a P-value of 0.003, the study indicates that safety-related factors contribute to patient satisfaction, though to a lesser extent. This finding suggests that further research is needed to explore which specific safety measures are most impactful in improving patient satisfaction.

Efficiency in nursing care also plays a crucial role in shaping patient satisfaction. The positive coefficient value observed in this study, coupled with a T-statistics value of 3.142 and a low P-value of 0.000, confirms the significant impact of efficient nursing practices on overall satisfaction. Efficient care delivery, including timely interventions and streamlined communication, positively influences the patient experience. Finally, the study highlights a strong correlation between patient satisfaction and loyalty. A coefficient value of 0.686 supports the hypothesis that greater satisfaction leads to higher loyalty. Satisfied patients are more likely to remain loyal to their healthcare provider and recommend the facility to others, contributing to its positive reputation and attracting new patients. The findings of this study emphasize the importance of enhancing specific aspects of nursing care, such as empathy, tangibility, safety, efficiency, and care improvement, to foster greater patient satisfaction and loyalty. By prioritizing these dimensions, healthcare providers can optimize patient experiences and ensure long-term success

Conclusion

This study delves into the intricate relationship between nursing care quality, patient satisfaction, and loyalty. The investigation reveals the significant impact of tangible elements, empathy, safety, efficiency, and improvements in care on patient satisfaction, implying potential consequences for patient loyalty. The statistical analyses, particularly T statistics and P values, underscore the varying degrees of influence each factor holds over satisfaction. The study highlights the complex dynamics of patient satisfaction within the healthcare paradigm in addition to the previously discussed components. Tangible emphasis placed on material components, including the buildings and surroundings, indicates how important it is to provide a welcoming and pleasant environment for patients. It becomes clear that empathy plays a crucial part, highlighting the significance of nurses' emotional intelligence, comprehension, and attentiveness to patient requirements. In line with larger healthcare quality goals, safety considerations, which include both physical safety and clear communication, have a substantial positive impact on patient satisfaction. The

effectiveness of care delivery and ongoing improvement initiatives further show the dynamic character of the healthcare service supply. This study also provides critical new understandings for healthcare professionals and legislators who want to improve patient-centered treatment and patient loyalty in healthcare environments, providing further insight into areas of satisfaction and areas for development. According to (Nyelisani, *et al*., 2023) Hospital administration must provide adequate support mechanisms to enable professional nurses to deliver high-quality nursing care, and it is determined that hospitals must be equipped with all the resources required to offer patients high-quality treatment. Continuous evaluation of patient satisfaction and service quality is necessary to raise the standard of patient care.

Limitations and Future Research Directions

This study cannot be generalized to all hospital nurses, as this study was conducted in a few private hospitals of Karachi, Pakistan. Hence, other private and public institutions should not be included for generalizability. There could be many other factors that lead to patient satisfaction, but this study sheds light on limited factors. Future research may investigate the other services of primary, secondary and tertiary care hospitals.

Managerial Implications

The study recommends an integrated approach to improve satisfaction with patients and the quality of nursing care. First and foremost, healthcare facilities must make investments in material components, emphasizing the upkeep of a comfortable physical setting. Prioritizing empathy training programs for healthcare personnel, especially nurses, can enhance their emotional intelligence and interpersonal skills. To make sure patients feel safe, it is essential to communicate safety procedures openly and transparently. It is imperative to establish a culture of continuous improvement, aggressively seek patient input, and streamline care delivery systems to maximize efficiency. Furthermore, it empowers patients and enhances overall satisfaction. Management of healthcare facilities may utilize the study's findings to prioritize and customize programs that target certain factors affecting patient happiness. Supervisors may provide a patient-centered environment that not only satisfies clinical requirements but also improves the whole healthcare experience by emphasizing empathy, concrete elements, efficiency, and overall satisfaction and encourage better communication amongst the diverse team members (Nicholas *et al.*, 2017). These tactical moves might increase patient happiness, encourage patient loyalty, and establish the healthcare company as the community's go-to provider.

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Declaration of Interest

The authors declare that there no conflicts of interest.

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