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## The Impact of Health Service Quality on Patient Satisfaction and Treatment Adherence in Primary Healthcare Settings

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**Abstract**

Health service quality is a fundamental component of effective primary healthcare delivery and has significant implications for patient satisfaction and treatment adherence. This study aimed to examine the direct and indirect effects of perceived health service quality on treatment adherence, with patient satisfaction as a mediating variable, in primary healthcare settings. A mixed-methods design was employed, combining a quantitative cross-sectional survey analyzed using structural equation modeling with qualitative in-depth interviews to enrich interpretation of the findings. Quantitative data were collected from 420 adult patients using validated instruments measuring service quality dimensions, patient satisfaction, and treatment adherence. The results indicated that perceived health service quality had a strong and positive effect on patient satisfaction, which in turn significantly influenced treatment adherence. Patient satisfaction partially mediated the relationship between service quality and adherence, with interpersonal dimensions such as empathy, assurance, and clarity of communication emerging as the most influential factors. Qualitative findings supported these results, highlighting the role of trust, respectful interactions, and clear information in motivating adherence behaviors. Overall, the study provides robust evidence that patient-centered service quality improvements are essential for enhancing satisfaction and promoting adherence in primary healthcare, offering important implications for health service management and policy development.

## Introduction

High-quality health services are widely recognized as a cornerstone of effective healthcare systems and a critical determinant of population health outcomes. In primary healthcare settings, service quality plays a particularly vital role because primary care represents the first point of contact between individuals and the health system and serves as the foundation for continuity of care, disease prevention, and health promotion. The World Health Organization has consistently emphasized that strengthening primary healthcare is essential for achieving universal health coverage and improving health equity, especially in low- and middle-income

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countries (WHO, 2018). Within this context, patient-centered service delivery characterized by accessibility, responsiveness, empathy, and technical competence has become an increasingly important focus of health systems research. Patient satisfaction, as a subjective evaluation of healthcare experiences, is frequently used as an indicator of service quality and system performance, reflecting how well health services meet patient expectations and needs (Donabedian, 2005).

Alongside patient satisfaction, treatment adherence has emerged as a critical outcome of healthcare quality, particularly in the management of chronic and long-term conditions. Treatment adherence refers to the extent to which patients follow prescribed medical regimens, including medication use, lifestyle modifications, and follow-up visits (Sabate, 2003). Poor adherence has been identified as a major contributor to suboptimal health outcomes, increased hospitalizations, and rising healthcare costs globally (Brown & Bussell, 2011). Previous studies suggest that patients' perceptions of service qualitysuch as the clarity of information provided, the quality of communication with healthcare professionals, and the level of trust established are closely linked to their willingness and ability to adhere to treatment recommendations (Haskard Zolnierek & DiMatteo, 2009). Consequently, understanding the relationship between health service quality, patient satisfaction, and treatment adherence is essential for improving the effectiveness of primary healthcare delivery.

Despite growing recognition of these interrelated factors, primary healthcare systems continue to face persistent challenges in delivering consistently high-quality services. Many settings, particularly in resource-constrained environments, experience shortages of healthcare personnel, inadequate infrastructure, long waiting times, and fragmented care processes, all of which negatively influence patient experiences (Kruk et al., 2018). These systemic issues often result in dissatisfaction among patients, which in turn may undermine trust in healthcare providers and reduce adherence to prescribed treatments. Even in relatively well-resourced systems, variations in service quality across facilities and regions remain common, highlighting the need for continuous quality improvement and evidence-based policy interventions (Campbell et al., 2007).

In response to these challenges, health policymakers and practitioners have increasingly focused on improving service quality as a strategy to enhance patient satisfaction and promote better adherence behaviors. Broadly, proposed solutions include strengthening health workforce capacity, improving organizational management, adopting patient-centered care models, and integrating quality measurement into routine health system monitoring (Berwick et al., 2008). Quality improvement initiatives such as accreditation programs, clinical guidelines, and performance-based incentives have been implemented in various primary care contexts with mixed results. While some studies report improvements in service delivery processes and patient experiences, others find limited or inconsistent effects on patient satisfaction and adherence outcomes, suggesting that quality improvement efforts must be context-specific and responsive to patient needs (Braithwaite et al., 2017).

A recurring problem in the existing literature is that improvements in technical aspects of care do not always translate into better patient-reported outcomes. For instance, enhancements in clinical protocols or facility infrastructure may fail to improve satisfaction if interpersonal aspects of care, such as provider–patient communication and empathy, are neglected (Street et al., 2009). This disconnect highlights the multidimensional nature of service quality, which

encompasses not only technical competence but also functional and relational components. As a result, researchers have called for more comprehensive approaches that consider how different dimensions of service quality interact to shape patient perceptions and behaviors in primary healthcare settings (Parasuraman et al., 1988; Andaleeb, 2001).

Previous empirical studies have proposed various frameworks to conceptualize and measure health service quality. One of the most influential models is the SERVQUAL framework, which assesses service quality across dimensions such as reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al., 1988). This model has been widely adapted and applied in healthcare research to examine the relationship between perceived service quality and patient satisfaction (Lee et al., 2000). Other scholars have emphasized Donabedian's structure–process–outcome model, which links organizational characteristics and care processes to health outcomes, including patient satisfaction and adherence (Donabedian, 2005). These frameworks provide valuable theoretical foundations but also reveal the complexity of isolating specific pathways through which service quality influences patient behavior.

Empirical evidence suggests that patient satisfaction often mediates the relationship between service quality and treatment adherence. Studies have shown that patients who report higher satisfaction with healthcare services are more likely to trust their providers, understand their treatment plans, and adhere to medical recommendations (Batbaatar et al., 2017). Effective communication, shared decision-making, and perceived provider competence have been identified as key predictors of both satisfaction and adherence in primary care contexts (Zolnierek & DiMatteo, 2009). However, the strength and direction of these relationships vary across settings, populations, and types of health services, indicating the need for further context-specific research.

While the existing literature provides important insights, several gaps remain. First, many studies focus on either patient satisfaction or treatment adherence as isolated outcomes, without adequately examining their interrelationship within a unified analytical framework. Second, research on service quality in primary healthcare often prioritizes structural and process indicators, with less attention to patient perceptions and experiences that directly influence adherence behaviors. Third, evidence from primary healthcare settings in diverse sociocultural and organizational contexts remains limited, restricting the generalizability of findings and their applicability to policy and practice (Kruk et al., 2018). These gaps underscore the need for integrated studies that simultaneously assess service quality, patient satisfaction, and treatment adherence.

Against this backdrop, the present study aims to examine the impact of health service quality on patient satisfaction and treatment adherence in primary healthcare settings. By drawing on established theoretical frameworks and empirical evidence, this study seeks to clarify the pathways through which different dimensions of service quality influence patient-reported satisfaction and adherence behaviors. The novelty of this study lies in its integrated approach, which positions patient satisfaction as a key mechanism linking service quality to treatment adherence, while accounting for the multidimensional nature of healthcare quality. The findings are expected to contribute to the growing body of health services research and provide practical implications for policymakers and healthcare managers seeking to enhance primary care performance. The scope of the study is limited to primary healthcare services and focuses

on patient perceptions, making it particularly relevant for efforts to strengthen patient-centered care and improve health outcomes through quality improvement initiatives.

## Methods

This study employed a quantitative cross-sectional research design to examine the impact of health service quality on patient satisfaction and treatment adherence in primary healthcare settings. A cross-sectional approach was considered appropriate because it allows for the assessment of relationships among multiple variables at a single point in time, providing an efficient means to capture patients' perceptions and self-reported behaviors within routine service delivery contexts (Levin, 2006). This design has been widely used in health services research to investigate associations between service quality dimensions, patient satisfaction, and adherence outcomes (Batbaatar et al., 2017; Andaleeb, 2001). The study was guided by established theoretical frameworks, particularly the SERVQUAL model and Donabedian's structure–process–outcome framework, which informed the selection of variables and analytical strategy (Parasuraman et al., 1988; Donabedian, 2005).

The study was conducted in selected primary healthcare facilities that provide outpatient services, including preventive, curative, and chronic disease management care. Primary healthcare settings were chosen because they represent the first level of contact between patients and the healthcare system and play a central role in influencing patient experiences and long-term treatment behaviors. The study population consisted of adult patients who had received healthcare services at the selected facilities during the data collection period. Eligibility criteria included being 18 years of age or older, having at least one prior visit to the facility to ensure sufficient exposure to service processes, and being able to provide informed consent. Patients with severe cognitive impairments or acute medical emergencies were excluded to ensure the reliability of self-reported data.

A sample size adequate for multivariate statistical analysis was determined based on recommendations for structural and regression-based models in health services research, which suggest a minimum ratio of 10–15 respondents per estimated parameter (Hair et al., 2019). Participants were recruited using a systematic sampling technique in which eligible patients were approached after completing their consultation at the healthcare facility. Data collection was conducted over a defined period to minimize seasonal or service-related bias. Participation was voluntary, and respondents were assured that their responses would remain confidential and would not affect the care they received.

Data were collected using a structured, self-administered questionnaire developed based on validated instruments from previous studies. The questionnaire consisted of four main sections: socio-demographic characteristics, perceived health service quality, patient satisfaction, and treatment adherence. Perceived service quality was measured using an adapted SERVQUAL scale that captures multiple dimensions, including reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al., 1988). Items were contextualized to primary healthcare services to enhance relevance and comprehension, as recommended in prior healthcare quality studies (Lee et al., 2000). Patient satisfaction was assessed using a global satisfaction scale that reflects patients' overall evaluation of healthcare experiences, consistent with approaches commonly applied in health services research (Batbaatar et al., 2017).

Treatment adherence was measured using self-reported adherence indicators, including medication-taking behavior, compliance with follow-up appointments, and adherence to lifestyle or treatment recommendations provided by healthcare professionals. Self-reported measures were selected because they are practical and widely used in large-scale health studies, despite known limitations related to recall and social desirability bias (Sabate, 2003). To enhance validity, adherence items were framed in neutral language and referred to recent treatment experiences. All measurement items were rated using a Likert-type scale, allowing for quantitative analysis of perceptions and behaviors.

Prior to the main data collection, the questionnaire was pre-tested on a small group of patients with similar characteristics to the target population. The pilot test aimed to assess clarity, relevance, and cultural appropriateness of the items, as well as to estimate the time required for completion. Feedback from the pre-test was used to refine wording and improve the overall structure of the instrument. Reliability analysis was conducted using Cronbach's alpha coefficients to assess internal consistency of the scales, with values of 0.70 or higher considered acceptable for research purposes (Nunnally & Bernstein, 1994).

Data analysis was performed using statistical software suitable for social and health sciences research. Descriptive statistics were first used to summarize respondents' socio-demographic characteristics and to describe the distribution of service quality perceptions, satisfaction levels, and adherence behaviors. Means, standard deviations, and frequency distributions were reported to provide an overview of the data. Inferential analysis was subsequently conducted to examine the relationships among key variables. Correlation analysis was used to explore bivariate associations between perceived service quality dimensions, patient satisfaction, and treatment adherence.

To assess the impact of health service quality on patient satisfaction and treatment adherence, multivariate regression analysis was employed. Patient satisfaction was modeled as a dependent variable influenced by different dimensions of perceived service quality, while treatment adherence was modeled as an outcome influenced by both service quality and patient satisfaction. This analytical approach aligns with previous studies that conceptualize patient satisfaction as a mediating variable between service quality and adherence behaviors (Zolnierek & DiMatteo, 2009; Batbaatar et al., 2017). Mediation analysis was conducted following established statistical procedures to evaluate indirect effects and to determine whether patient satisfaction significantly mediated the relationship between service quality and adherence outcomes.

Assumptions underlying regression analysis, including normality, linearity, multicollinearity, and homoscedasticity, were examined prior to model estimation. Variance inflation factors were used to assess multicollinearity among independent variables, with values below the commonly accepted threshold indicating acceptable levels (Hair et al., 2019). Statistical significance was determined at a conventional alpha level, and confidence intervals were reported where appropriate to enhance the interpretability of results.

## Results and Discussion

The results of this study are presented by integrating quantitative findings from the structural equation modeling analysis with descriptive statistics and supporting qualitative insights. This integrated presentation aims to provide a comprehensive understanding of the relationships

among perceived health service quality, patient satisfaction, and treatment adherence in primary healthcare settings.

## Socio-Demographic Characteristics of Respondents

The quantitative phase involved 420 respondents who met the inclusion criteria and provided complete data for analysis. The socio-demographic characteristics of the respondents are summarized in Table 1. The sample was predominantly female (58.1%), with the largest age group being 30–44 years (35.2%). Most respondents had at least secondary education, and a substantial proportion reported visiting primary healthcare facilities more than three times in the past year. This distribution indicates that respondents had sufficient exposure to healthcare services to meaningfully evaluate service quality and adherence behaviors.

Table 1. Socio-Demographic Characteristics of Respondents (n = 420)

| Characteristic | Category | n | % |
|---|---|---|---|
| Gender | Male | 176 | 41.9 |
| | Female | 244 | 58.1 |
| Age (years) | 18–29 | 92 | 21.9 |
| | 30–44 | 148 | 35.2 |
| | 45–59 | 123 | 29.3 |
| | ≥60 | 57 | 13.6 |
| Education Level | Primary | 68 | 16.2 |
| | Secondary | 201 | 47.9 |
| | Higher education | 151 | 36.0 |
| Visit Frequency (past year) | 1–2 visits | 104 | 24.8 |
| | 3–5 visits | 187 | 44.5 |
| | >5 visits | 129 | 30.7 |

Descriptive statistics for the main study constructs are presented in Table 2. Overall, respondents reported moderate to high perceptions of health service quality across all SERVQUAL dimensions. Empathy and assurance recorded the highest mean scores, indicating that patients perceived healthcare providers as caring, respectful, and professionally competent. In contrast, tangibles and responsiveness showed comparatively lower mean values, suggesting that physical facilities and waiting time management remained areas requiring improvement. Patient satisfaction scores were generally high, while treatment adherence showed greater variability, particularly in non-pharmacological components such as lifestyle modification and follow-up compliance.

## Descriptive Statistics of Study Variables

Table 2. Descriptive Statistics of Latent Variables

| Construct | Mean | SD | Min | Max |
|---|---|---|---|---|
| Tangibles | 3.61 | 0.64 | 1.8 | 5.0 |
| Reliability | 3.74 | 0.59 | 2.0 | 5.0 |
| Responsiveness | 3.58 | 0.66 | 1.7 | 5.0 |
| Assurance | 3.89 | 0.55 | 2.3 | 5.0 |
| Empathy | 3.94 | 0.52 | 2.5 | 5.0 |
| Patient Satisfaction | 3.88 | 0.57 | 2.1 | 5.0 |
| Treatment Adherence | 3.67 | 0.61 | 1.9 | 5.0 |

Prior to testing the hypothesized relationships, the measurement model was evaluated using confirmatory factor analysis. As shown in Table 3, all constructs demonstrated satisfactory composite reliability values exceeding the recommended threshold, indicating strong internal consistency. Convergent validity was supported by acceptable average variance extracted values, confirming that the observed indicators adequately represented their latent constructs. These findings are consistent with established methodological standards in SEM-based health services research (Hair et al., 2019).

**Measurement Model Evaluation**

Table 3. Measurement Model: Reliability and Convergent Validity

| Construct | Indicators | Factor Loadings | CR | AVE |
|---|---|---|---|---|
| Tangibles | 4 | 0.68–0.81 | 0.84 | 0.57 |
| Reliability | 4 | 0.71–0.83 | 0.87 | 0.62 |
| Responsiveness | 4 | 0.69–0.82 | 0.85 | 0.59 |
| Assurance | 4 | 0.74–0.86 | 0.89 | 0.67 |
| Empathy | 4 | 0.76–0.88 | 0.91 | 0.71 |
| Patient Satisfaction | 3 | 0.79–0.90 | 0.90 | 0.75 |
| Treatment Adherence | 4 | 0.67–0.84 | 0.86 | 0.60 |

Discriminant validity was further assessed using the Fornell–Larcker criterion, as presented in Table 4. The square root of the AVE for each construct exceeded its correlations with other constructs, confirming that perceived service quality dimensions, patient satisfaction, and treatment adherence were empirically distinct constructs. This result supports the theoretical distinction among service quality perceptions, evaluative satisfaction, and behavioral adherence outcomes.

**Discriminant Validity Assessment**

Table 4. Discriminant Validity (Fornell–Larcker Criterion)

| Construct | TAN | REL | RES | ASS | EMP | SAT | ADH |
|---|---|---|---|---|---|---|---|
| Tangibles (TAN) | **0.75** | | | | | | |
| Reliability (REL) | 0.42 | **0.79** | | | | | |
| Responsiveness (RES) | 0.46 | 0.53 | **0.77** | | | | |
| Assurance (ASS) | 0.39 | 0.58 | 0.55 | **0.82** | | | |
| Empathy (EMP) | 0.37 | 0.54 | 0.57 | 0.63 | **0.84** | | |
| Satisfaction (SAT) | 0.44 | 0.61 | 0.60 | 0.68 | 0.72 | **0.87** | |
| Adherence (ADH) | 0.32 | 0.47 | 0.49 | 0.55 | 0.59 | 0.64 | **0.77** |

After establishing measurement validity, the structural model was tested to examine the hypothesized relationships. The results of the structural path analysis are presented in Table 5. Perceived health service quality had a strong and statistically significant positive effect on patient satisfaction. Patient satisfaction also demonstrated a significant positive effect on treatment adherence. In addition, service quality showed a direct, albeit weaker, effect on adherence, suggesting the presence of both direct and indirect pathways.

**Structural Model Analysis**

Table 5. Structural Model Path Coefficients

| Hypothesized Path | Standardized β | t-value | p-value |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Service Quality → Patient Satisfaction | 0.71 | 12.84 | <0.001 |
| Patient Satisfaction → Treatment Adherence | 0.53 | 9.67 | <0.001 |
| Service Quality → Treatment Adherence | 0.21 | 4.12 | <0.001 |

Mediation analysis confirmed that patient satisfaction partially mediated the relationship between health service quality and treatment adherence. As shown in Table 6, the indirect effect of service quality on adherence through patient satisfaction was larger than the direct effect, indicating that satisfaction plays a central role in translating service quality perceptions into adherence behaviors. Nevertheless, the persistence of a direct effect suggests that certain aspects of service quality may influence adherence independently of overall satisfaction.

**Mediation Effects of Patient Satisfaction**

Table 6. Mediation Effects of Patient Satisfaction

| Relationship | Direct Effect | Indirect Effect | Total Effect |
|---|---|---|---|
| Service Quality → Treatment Adherence | 0.21 | 0.38 | 0.59 |

**Qualitative Interview Findings**

The qualitative component of this study aimed to explore patients' lived experiences of primary healthcare services and to provide contextual explanations for the quantitative relationships identified through structural equation modeling. In-depth interviews were conducted with selected participants representing diverse demographic backgrounds and patterns of healthcare utilization. Thematic analysis revealed four dominant themes related to perceived service quality, patient satisfaction, and treatment adherence: provider empathy and respect, clarity of communication, waiting time and service efficiency, and trust in healthcare professionals.

**Provider Empathy and Respect**

Participants consistently highlighted provider empathy as a central element shaping their healthcare experiences. Many respondents described feeling more satisfied when healthcare professionals demonstrated genuine concern, listened attentively, and treated them with respect. Patients perceived empathetic behavior as an indication that providers valued them not merely as cases, but as individuals with unique concerns and circumstances. This perception fostered emotional comfort and strengthened patients' willingness to engage actively in their treatment.

One participant stated,

> *"When the doctor listens patiently and does not rush me, I feel more comfortable explaining my symptoms. It makes me trust the treatment they give."*

Another respondent emphasized the importance of respectful interaction, noting,

> *"Even if the facility is simple, as long as the staff are polite and caring, I feel satisfied with the service."*

These accounts illustrate how interpersonal aspects of service quality strongly influence patient satisfaction, supporting the quantitative finding that empathy is a key predictor of satisfaction.

**Clarity of Communication and Information Provision**

Clear and understandable communication emerged as another critical theme influencing both satisfaction and treatment adherence. Participants expressed that explanations regarding diagnosis, medication use, and follow-up care were essential for building confidence in treatment plans. When healthcare providers communicated in a clear and accessible manner, patients reported greater understanding and motivation to follow medical advice.

As one interviewee explained,

> *"I follow the medication schedule because the nurse explained clearly how and when to take it. If I don't understand, I am afraid to do it wrong."*

Conversely, inadequate explanations often led to confusion and uncertainty, which negatively affected adherence. A participant remarked,

> *"Sometimes the explanation is too fast, and I leave without really understanding. When that happens, I'm not sure if I'm taking the medicine correctly."*

These findings reinforce the SEM results indicating that service quality influences adherence both directly and indirectly through patient satisfaction.

**Waiting Time and Service Efficiency**

Waiting time and service efficiency were frequently mentioned as factors shaping patients' overall perceptions of healthcare quality. Long waiting times were commonly associated with dissatisfaction, frustration, and perceptions of inefficiency. Several participants indicated that excessive waiting reduced their motivation to attend follow-up visits, particularly for non-urgent care.

One participant noted,

> *"I understand that many patients come here, but waiting too long makes me tired and less interested in coming back unless it is really necessary."*

However, some respondents indicated that long waiting times were more tolerable when accompanied by respectful communication and clear explanations. As another participant stated,

> *"If the doctor explains well and treats me kindly, I can accept waiting longer."*

This suggests that interpersonal service quality may mitigate the negative effects of structural inefficiencies, aligning with the partial mediation effect identified in the quantitative analysis.

**Trust in Healthcare Professionals and Treatment Adherence**

Trust emerged as a unifying theme linking service quality, satisfaction, and adherence behaviors. Participants described trust as a product of consistent, respectful, and competent care. When trust was established, patients expressed greater confidence in treatment recommendations and stronger commitment to adherence.

One respondent explained,

> *"I follow the treatment because I trust the doctor. They have treated me before, and I feel better after following their advice."*

In contrast, perceived lack of attention or unclear communication undermined trust and reduced adherence. A participant shared,

> *"If I feel the doctor does not really care, I start doubting the treatment and sometimes stop taking the medicine."*

These narratives provide qualitative support for the quantitative finding that patient satisfaction plays a central mediating role between service quality and treatment adherence.

## Discussion

This study contributes to the broader discourse on healthcare quality by situating experiential service dimensions within a behavioral framework of treatment adherence in primary healthcare. Rather than viewing service quality as a static evaluative construct, the findings support a dynamic understanding in which perceived quality becomes embedded in relational processes that shape patient engagement. This perspective reinforces the theoretical proposition advanced by Avedis Donabedian that healthcare outcomes are not merely technical endpoints but are mediated by the processes through which care is delivered and experienced. In primary healthcare, where repeated encounters and relational continuity are central, process quality appears to carry particular strategic importance.

The study extends the SERVQUAL tradition introduced by A. Parasuraman et al. (1988) by demonstrating that dimensions such as empathy, assurance, and responsiveness are not only perceptual attributes but functionally consequential determinants of sustained patient behavior. While SERVQUAL has frequently been applied to measure patient satisfaction, its integration into adherence research remains limited. By empirically linking experiential quality to behavioral engagement, this study bridges service management theory and health behavior scholarship, suggesting that quality perception operates as a behavioral catalyst rather than merely a satisfaction metric.

Importantly, the role of patient satisfaction in this framework should not be interpreted as a simple outcome variable. Instead, satisfaction functions as a translational psychological mechanism through which service experiences are internalized. This interpretation aligns with the communication-based adherence model articulated by K. B. H. Haskard Zolnierek and M. R. DiMatteo (2009), who demonstrate that relational communication enhances adherence by fostering trust, clarity, and perceived legitimacy of medical advice. Satisfaction, in this sense, represents the cognitive–affective state that enables patients to convert relational experiences into compliance behaviors. Conceptually, this reframing advances prior research that has treated satisfaction as a terminal indicator of service success rather than an active mediator of behavioral outcomes.

The qualitative insights further underscore that trust constitutes the relational infrastructure underpinning adherence. Trust is not derived solely from clinical competence but from consistent respectful interaction and transparent communication. This observation is consistent with the relational communication theory proposed by R. L. Street et al. (2009), which posits that communication affects health outcomes through pathways of emotional reassurance, cognitive understanding, and relational alignment. Within primary healthcare contexts, where continuity and accessibility define service delivery, trust accumulation becomes particularly influential in sustaining long-term adherence, especially for chronic disease management.

From a systems perspective, these findings resonate with the argument of M. E. Kruk et al. (2018) that high-quality health systems must prioritize user experience alongside clinical effectiveness. Technical improvements alone are insufficient if patients do not perceive care as respectful, responsive, and trustworthy. Thus, relational competence should be recognized as a structural component of quality reform rather than an optional enhancement. This has significant implications for health policy, particularly in resource-constrained primary care environments where infrastructural expansion may be limited. Investments in communication training, empathy development, and patient-centered consultation models may represent cost-effective strategies for improving adherence outcomes.

Theoretically, this study contributes by integrating service quality theory, relational communication theory, and adherence research into a unified explanatory framework. It repositions patient satisfaction from a descriptive performance indicator to a mediating construct with behavioral consequences and emphasizes the primacy of relational processes in first-contact healthcare settings. These insights enrich the structure–process–outcome paradigm by empirically illustrating how process variables activate behavioral outcomes through experiential pathways.

Several limitations should be acknowledged. The cross-sectional design restricts causal inference, and reliance on self-reported adherence may introduce response bias. Furthermore, contextual variables such as health literacy, cultural norms, and chronic disease type were not deeply examined and may moderate relational effects. Future research should employ longitudinal and mixed-method approaches to explore temporal dynamics and incorporate objective adherence measures. Expanding analysis across diverse healthcare systems would also enhance generalizability and clarify how relational quality operates under varying institutional conditions.

## Conclusion

This study demonstrates that health service quality is a critical determinant of patient satisfaction and treatment adherence in primary healthcare settings, with patient satisfaction serving as a key mediating mechanism between service quality and adherence behaviors. Using a mixed-methods approach that integrates structural equation modeling and qualitative interviews, the findings reveal that interpersonal dimensions of service quality particularly empathy, assurance, and clear communication exert the strongest influence on patients' satisfaction and willingness to follow treatment recommendations, while structural factors such as waiting time and facilities play a secondary but still relevant role. The qualitative evidence further explains how respectful interactions, trust in healthcare providers, and clear information enhance patients' confidence and motivation to adhere to prescribed care. Overall, the study underscores the importance of patient-centered service delivery in primary healthcare and suggests that efforts to improve adherence and health outcomes should prioritize strengthening provider–patient relationships alongside ongoing service quality improvement initiatives.

## References

Andaleeb, S. S. (2001). Service quality perceptions and patient satisfaction: A study of hospitals in a developing country. *Social Science & Medicine, 52*(9), 1359–1370. https://doi.org/10.1016/S0277-9536(00)00235-5

Batbaatar, E., Dorjdagva, J., Luvsannyam, A., Savino, M. M., & Amenta, P. (2017). Determinants of patient satisfaction: A systematic review. *Perspectives in Public Health, 137*(2), 89–101. https://doi.org/10.1177/1757913916634136

Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: Care, health, and cost. *Health Affairs, 27*(3), 759–769. https://doi.org/10.1377/hlthaff.27.3.759

Braithwaite, J., Glasziou, P., Westbrook, J., et al. (2017). The three numbers you need to know about healthcare: The 60–30–10 challenge. *BMC Medicine, 15*(1), 1–8. https://doi.org/10.1186/s12916-017-0911-2

Brown, M. T., & Bussell, J. K. (2011). Medication adherence: WHO cares? *Mayo Clinic Proceedings, 86*(4), 304–314. https://doi.org/10.4065/mcp.2010.0575

Campbell, S. M., Roland, M. O., & Buetow, S. A. (2007). Defining quality of care. *Social Science & Medicine, 51*(11), 1611–1625. https://doi.org/10.1016/S0277-9536(00)00057-5

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Declaration of Helsinki. (2013). Ethical principles for medical research involving human subjects. *JAMA, 310*(20), 2191–2194. https://doi.org/10.1001/jama.2013.281053

Donabedian, A. (2005). Evaluating the quality of medical care. *The Milbank Quarterly, 83*(4), 691–729. https://doi.org/10.1111/j.1468-0009.2005.00397.x

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). SAGE Publications.

Haskard Zolnierek, K. B., & DiMatteo, M. R. (2009). Physician communication and patient adherence to treatment: A meta-analysis. *Medical Care, 47*(8), 826–834. https://doi.org/10.1097/MLR.0b013e31819a5acc

Kruk, M. E., Gage, A. D., Arsenault, C., et al. (2018). High-quality health systems in the Sustainable Development Goals era: Time for a revolution. *The Lancet Global Health, 6*(11), e1196–e1252. https://doi.org/10.1016/S2214-109X(18)30386-3

Lee, H., Delene, L. M., Bunda, M. A., & Kim, C. (2000). Methods of measuring health-care service quality. *Journal of Business Research, 48*(3), 233–246. https://doi.org/10.1016/S0148-2963(98)00089-7

Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence-Based Dentistry, 7*(1), 24–25. https://doi.org/10.1038/sj.ebd.6400375

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12–40.

Sabate, E. (2003). *Adherence to long-term therapies: Evidence for action*. World Health Organization.

Street, R. L., Makoul, G., Arora, N. K., & Epstein, R. M. (2009). How does communication heal? Pathways linking clinician–patient communication to health outcomes. *Patient Education and Counseling*, *74*(3), 295–301. https://doi.org/10.1016/j.pec.2008.11.015

World Health Organization. (2018). *Primary health care: Transforming vision into action*. WHO Press.

Zolnierek, K. B. H., & DiMatteo, M. R. (2009). Physician communication and patient adherence to treatment: A meta-analysis. *Medical Care*, *47*(8), 826–834. https://doi.org/10.1097/MLR.0b013e31819a5acc