

RESEARCH ARTICLE

THE EFFECT OF EMPATHY ON PATIENT SATISFACTION
IN HEMODIALYSIS SERVICES: A SERVQUAL-BASED
CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Empathy is a fundamental aspect of healthcare service quality and plays a vital role in influencing patient satisfaction, especially in long-term, high-contact treatments such as hemodialysis. Despite its importance, limited research in Indonesia has specifically explored the impact of empathy on patient satisfaction in hemodialysis settings. This study aims to evaluate the effect of empathy on patient satisfaction among individuals receiving hemodialysis at Jakarta Hajj Hospital using the SERVQUAL framework.

Methods: A quantitative, cross-sectional study was conducted at Jakarta Hajj Hospital between November and December 2022, involving 118 hemodialysis patients selected through consecutive sampling. Data were collected using a structured questionnaire adapted from the KKP-2017 and SERVQUAL instruments. Statistical analysis included

descriptive statistics, followed by assumption tests (normality, linearity, and heteroscedasticity), and simple linear regression using SPSS version 26.

Results: The mean empathy score was 3.47 ± 0.63 . Simple linear regression indicated that empathy had a statistically significant effect on patient satisfaction ($B = 0.701$, $SE = 0.084$, 95% CI [0.535–0.868], $\beta = 0.613$, $R^2 = 0.375$, $p < 0.001$). The fitted model was: Patient Satisfaction = $13.24 + 0.701$ (Empathy).

Conclusion: Empathy significantly contributes to patient satisfaction in hemodialysis services. Strengthening empathetic communication and patient-provider relationships may enhance service quality and overall patient experiences in chronic care environments.

Keywords: Empathy, patient satisfaction, hemodialysis, SERVQUAL, healthcare quality

INTRODUCTION

Patient satisfaction is a widely recognized indicator of healthcare service quality and is closely linked to treatment adherence, clinical outcomes, and institutional.¹ Patient satisfaction reflects a patient's perception and attitude toward their overall care experience. Regular evaluation of patient satisfaction is widely recognized as an important element in complementing other quality assessment and assurance methods. Tracking satisfaction levels is essential for continuously enhancing the healthcare system's ability to provide high-quality services.²

In the context of chronic illnesses such as Chronic Kidney Disease (CKD), which require ongoing, complex, and resource-intensive treatments like hemodialysis, ensuring high levels of patient satisfaction becomes particularly crucial.³ Globally, CKD affects millions, and in Indonesia, the increasing prevalence of this condition has

been met with a significant expansion of dialysis units, particularly following the implementation of the National Health Insurance program, underscoring the urgent need to enhance service quality in these settings.⁴

Hemodialysis is a routine yet intensive treatment modality that requires frequent and long-term interactions with healthcare professionals. Hemodialysis patients often evaluate service quality not only through clinical outcomes but also through emotional support, communication, and empathy demonstrated by medical staff during treatment.⁵ The physical and psychological burden of hemodialysis, ranging from fatigue, dietary limitations, to emotional distress, makes patients more reliant on empathetic care as a buffer to improve their overall experience.⁶ Furthermore, research has shown that higher levels of patient-perceived empathy from nurses and physicians correlate with better adherence to treatment regimens and improved satisfaction scores among dialysis patients. In the Indonesian context,

studies reveal that despite advances in infrastructure, interpersonal aspects like empathy remain inconsistently addressed across hemodialysis units, underlining the need for targeted quality improvements.⁷ Thus, in hemodialysis settings, the presence of empathetic interactions is not merely a supplementary aspect of care but a central determinant of patient satisfaction and health engagement.⁸

Patient satisfaction and health outcomes are strongly affected by the quality of care provided.⁹ Patients' perceptions of service quality are shaped by various interrelated components, including the technical competence of providers, the efficiency of administrative processes, the physical environment, and, critically, the interpersonal dimensions of care.¹⁰ Among these, empathy has emerged as a key driver of satisfaction across healthcare settings.¹¹ In hemodialysis care, where patients routinely engage in long-term and high-frequency interactions with clinical staff, the role of empathy becomes even more pronounced.¹

Empathy, one interpersonal factor that plays a key role in shaping patient satisfaction, refers to a healthcare provider's ability to recognize and understand the emotions, concerns, and perspectives of their patients, and to respond with appropriate care and compassion during clinical interactions.¹² Beyond fostering emotional connection, empathy strengthens medical staff-patient relationships, supports effective therapeutic engagement even in situations of conflict, and contributes to patient outcomes.¹³ When healthcare professionals act on empathetic understanding, patients often feel more heard, valued, and supported in their care journey.¹⁴

To assess healthcare service quality comprehensively, the SERVQUAL model by Parasuraman et al. (1985) is among the most widely applied frameworks. It evaluates five core dimensions of service quality: tangibility, reliability, responsiveness, assurance, and empathy.¹⁵ Numerous studies have demonstrated strong correlations between these dimensions, especially empathy, and patient satisfaction in a variety of healthcare environments, including outpatient clinics and dialysis centers.^{16–18} However, most of the existing literature has either not specifically isolated empathy as a determinant or has focused on general outpatient populations, resulting in a gap in research concerning hemodialysis patients in Indonesian hospital settings.

Therefore, this study aims to investigate the influence of empathy on patient satisfaction in hemodialysis services at Jakarta Hajj Hospital using the SERVQUAL model. By focusing on the interpersonal quality of care, specifically empathy, this cross-sectional analysis seeks to contribute empirical evidence that supports targeted service improvements in chronic kidney care, ultimately enhancing patient experience and health outcomes.

METHODS

Study Design

This cross-sectional, quantitative study aimed to assess the influence of the empathy dimension of healthcare service quality on patient satisfaction among individuals undergoing hemodialysis at Jakarta Hajj Hospital. The research was conducted between November and December 2022, following approval from the Research Ethics Committee of the Faculty of Medicine, Universitas Islam Negeri Syarif Hidayatullah Jakarta (Approval No: B-073/F12/KEPK/TL.00/11/2022). All subjects provided written informed consent prior to enrollment. Subjects were assured of confidentiality and anonymity during the study, and they were informed that they could withdraw from the research at any stage without consequence.

Subject Selection

The source population consisted of 145 patients receiving routine hemodialysis at Jakarta Hajj Hospital. A total of 118 patients were recruited using consecutive sampling. Inclusion criteria included willingness to participate and having received hemodialysis services at the hospital. No exclusion based on age or gender was applied.

The minimum sample size was collected using Lemeshow's formula for cross-sectional studies, resulting in a required number of 97 participants. A total of 118 patients were successfully recruited, exceeding this requirement. This sample also meets the regression rule of thumb ($50 + 8m$ for one predictor = 58), further ensuring adequate statistical power.

Instruments and Data Collection

Data were gathered through a structured questionnaire that included closed-ended items, which used a four-point Likert scale ranging from strongly disagree (1) to strongly agree (4). Scores for each scale were calculated by summing item responses, with higher scores indicating higher patient satisfaction or empathy.

The dependent variable, patient satisfaction, was measured using KKP-2017 by Imaninda & Azwar (2016), a modified version of the PSQ-18 (Patient Satisfaction Questionnaire Short Form) translated into Indonesian and adapted to cover five key dimensions: accessibility, financial factors, technical quality, interpersonal behavior, and physical environment, totaling 10 items.¹⁹ The patient satisfaction questionnaire was translated into Indonesian and adapted for the local context. Example items include *"The doctor explained in detail the purpose of the medical tests I underwent"* and *"I felt very free to convey my health complaints to the doctor."* The patient satisfaction scale demonstrated good internal consistency, with a Cronbach's α of 0.803.

The independent variable, empathy, was assessed using five items adapted from the SERVQUAL model.¹⁵ Example items include “*Doctors and nurses listen attentively to my complaints*” and “*Hospital staff provide individual attention to each patient*”. The empathy subscale showed moderate reliability with a Cronbach's α of 0.617, which is considered acceptable given the limited number of items in the construct.

Handling of Data

The questionnaire was checked for completeness at the time of collection. No missing data were found in the final dataset. Outlier analysis was performed using standardized residuals, with the result that no cases exceeded ± 3 SD, so all participants were retained.

Statistical Analysis

Descriptive statistics were used to summarize subject demographics and response patterns. Assumption tests, such as normality, linearity, and homoscedasticity, were conducted and satisfied. A simple linear regression analysis was performed to evaluate the effect of empathy on patient satisfaction. Regression coefficients were reported with unstandardized coefficient (B), standard error (SE), standardized beta (β), t statistic, p-value, and 95%

confidence intervals (CI). All analyses were conducted using IBM SPSS version 26, with a significance level of $p < 0.01$.

ETHICAL APPROVAL

This study was conducted following approval from the Research Ethics Committee of the Faculty of Medicine, Universitas Islam Negeri Syarif Hidayatullah Jakarta, under approval number B-073/F12/KEPK/TL.00/11/2022. All procedures ensured respect for subject autonomy, safety, and confidentiality throughout the research process. Before data collection, each subject received a clear explanation of the study's purpose, procedures, potential risks, and expected benefits. Written informed consent was obtained from all subjects before their participation.

To maintain confidentiality, subject data were anonymized using unique identification codes, and all records were stored securely with restricted access, limited only to the research team. Subjects were informed that their involvement was voluntary and that they could withdraw from the study at any time without any impact on the healthcare services they received.

RESULTS

Table 1. Subject Characteristics

Subject Characteristics	Frequency	Percentage %
Gender		
Male	56	47.5
Female	62	52.5
Age		
12-25 years	3	2.5
26-45 years	37	31.4
46-65 years	59	50
> 65 years	19	16.1
Length of time on hemodialysis		
0 - 2 years	81	68.6
3 - 5 years	32	27.1
6 - 8 years	3	2.5
9 - 11 years	2	1.7
Frequency of hemodialysis therapy per week		
2 times	113	95.8
3 times	5	4.2

The subject population consisted of 118 hemodialysis patients, with a slightly higher proportion of females (52.5%) compared to males (47.5%). In terms of age distribution, the majority were middle-aged adults between 46 and 65 years (50%), followed by those aged 26 to 45 years (31.4%), while older adults above 65 years represented 16.1%. Only a small fraction (2.5%) were in the younger age

range of 12 to 25 years. These figures align with the typical epidemiological pattern of chronic kidney disease, which tends to increase with age. The predominance of middle-aged and elderly individuals highlights the need for tailored communication strategies and empathetic approaches suited to this age group, who may have different emotional and informational needs compared to younger patients.

In terms of clinical background, the largest proportion of patients (68.6%) had been undergoing hemodialysis for less than two years, indicating that the majority were relatively new to the treatment process. This was followed by 27.1% who had been on dialysis for three to five years, while long-term dialysis patients were notably fewer, with only 4.2% having undergone treatment for more than six years. Additionally, 95.8% of patients received hemodialysis therapy twice per week, and only 4.2% had sessions three

times per week. In most clinical settings, hemodialysis is performed approximately three times per week, although frequency and duration may vary depending on patient condition and institutional protocols. Collectively, these characteristics provide critical context for understanding patient expectations, emotional adjustment, and satisfaction levels, especially among newer patients and those receiving suboptimal treatment frequencies.

Table 2a. Empathy Dimension of Subjects

	SD	Variance	Min	Max	Median	Mode	Average	Total
Empathy	0.63	0.40	1	4	4	4	3.47	2046

Table 2b. Satisfaction Dimension of Subjects

	SD	Variance	Min	Max	Median	Mode	Average	Total
Technical Quality	0.68	0.46	1	4	3	3	3.29	776
Accessibility	0.72	0.52	1	4	3	3	3.32	783
Physical Environment	0.81	0.66	1	4	3	3	3.17	749
Interpersonal Behavior	0.66	0.44	1	4	3	3	3.33	785
Financial Factors	0.76	0.58	1	4	3	3	3.09	729

The empathy aspect shown in Table 2a achieved a total score of 2046, with a mean score of 3.47, suggesting that while respondents generally view empathy positively, their experiences fall short of being truly exceptional. The variance of 0.40 and standard deviation of 0.63 indicate relatively consistent perceptions across participants, implying that most individuals share a similar, though moderately favorable, impression of the empathy demonstrated by healthcare providers. This consistency reinforces the idea that empathy is a recognized and somewhat stable component of the care experience. However, the average score being only slightly above the midpoint reflects an opportunity for meaningful improvement. Enhancing the emotional quality of provider and patient interactions could lead to stronger emotional reassurance and a deeper sense of being understood, both of which are essential for increasing overall satisfaction and trust in healthcare delivery.

that patients generally value respectful and empathetic interactions with healthcare providers, although some variability remains. Accessibility followed closely with a mean of 3.32 and a slightly higher standard deviation of 0.72, reflecting generally favorable yet somewhat inconsistent experiences in terms of service availability and convenience. Technical quality showed a mean score of 3.29 and the lowest standard deviation at 0.29, indicating stable perceptions of provider competence and procedural reliability across the patient sample.

Patient satisfaction (Table 2b) was evaluated across five core dimensions: technical quality, accessibility, physical environment, interpersonal behavior, and financial factors. These dimensions represent fundamental pillars for assessing healthcare service delivery. They offer more than just descriptive statistics, as they serve as indicators of where services succeed or fall short. Interpersonal behavior emerged as the strongest dimension, with a mean score of 3.33 and a moderate standard deviation of 0.66, suggesting

Conversely, financial factors and the physical environment were rated lower, with mean scores of 3.09 and 3.17, and higher variability (standard deviations of 0.76 and 0.81, respectively). These findings suggest less favorable and more inconsistent patient experiences regarding affordability, billing transparency, and the condition or comfort of facilities. The wider variability in these two dimensions may reflect systemic disparities in financial access and facility maintenance across different service points. While the overall patient ratings ranged from 1 to 4, the consistent mode and median of 3 across all dimensions indicate that most patients rated their experiences moderately or positively. However, the presence of minimum scores suggests that a subset of patients encountered significant issues. Altogether, these insights point to generally satisfactory healthcare experiences but also emphasize the need for targeted improvements in

financial clarity and environmental consistency to enhance patient trust and satisfaction more broadly. Normality test for the empathy variable was found to follow a normal distribution, as indicated by a p-value of 0.093. Since this exceeds the 0.05 threshold, there is no significant deviation from normality, meaning that the distribution of empathy scores aligns with what would be expected in a typical population. This supports the use of parametric statistical tests in subsequent analyses and indicates that the data are robust and representative for drawing general conclusions.

The relationship between empathy and patient satisfaction was determined to be linear in the result of the linearity test, with a significance value of 0.252. Because this value is above the threshold of 0.05, it suggests there is no evidence of a nonlinear relationship, meaning that increases in empathy are associated with proportional increases in patient satisfaction. This finding confirms that efforts to improve provider empathy can lead to predictable improvements in satisfaction, validating the use of linear regression to model this relationship. Additionally, the data exhibited homoscedasticity, as shown by a significance value of 0.243. This implies that the variance of the residuals (errors) remains consistent across different levels of empathy. Assumption testing confirmed that the data met normality, linearity, and homoscedasticity requirements, indicating that the model satisfied regression assumptions. In practical terms, this means the reliability of the regression model is strong, and there is no systematic bias in the prediction errors. Consequently, the conclusions drawn from the regression analysis can be interpreted with greater confidence.

The linear regression analysis indicates that empathy has a significant effect on patient satisfaction ($B = 0.701$, $SE = 0.084$, 95% CI [0.535-0.868], $\beta = 0.613$, $t = 8.346$, $R^2 = 0.375$, $p < 0.001$). This indicates that for every one-point increase in empathy score, patient satisfaction increases by 0.701 points on average. Empathy accounted for 37.5% of the variance in patient satisfaction, underscoring its substantial role in shaping patients' care experiences. These results highlight the importance of empathetic communication in improving the overall quality of patient care. The fitted model was: Patient Satisfaction = $13.24 + 0.701(\text{Empathy})$. Overall, these research findings underscore the importance of empathy within healthcare settings. By promoting more compassionate interactions between providers and patients, it is possible to significantly enhance the overall quality of the patient experience.

DISCUSSION

This study provides evidence that patient satisfaction variations among hemodialysis patients are significantly influenced by empathy. Patients were more likely to express satisfaction with their care when they felt that their

healthcare providers showed a higher level of empathy. This underscores empathy as a crucial element that shapes the patient experience, especially in chronic care settings like hemodialysis, where ongoing and frequent interpersonal interactions occur. A study conducted by Hreńczuk (2021) also revealed a strong positive correlation between therapeutic communication and patient satisfaction in hemodialysis settings, emphasizing the importance of empathetic interaction in everyday care.²⁰

The findings reaffirm the significance of empathy as a fundamental component of the SERVQUAL framework, which evaluates healthcare service quality from the patient's perspective. In contrast to earlier studies that primarily focus on the technical aspect or infrastructure, this research highlights the importance of the human connection between healthcare providers and patients. It addresses a gap in Indonesian literature by specifically examining empathy within the hemodialysis context, where effective and recurring interpersonal communication is essential.

The variations in satisfaction levels indicate that empathy should be considered a strategic focus for enhancing service quality. In practice, this implies that healthcare providers should receive training and support to actively demonstrate compassion, engage in attentive listening, and foster trust with their patients. These abilities are particularly vital in long-term care environments, where consistent interpersonal interactions play a key role in influencing patients' emotional well-being and their engagement with treatment. Gertsman et al. (2023) showed that perceived empathy in chronic care settings leads to improved psychological outcomes and enhances overall healthcare effectiveness, reinforcing the importance of maintaining empathetic practices over time.²¹

This study found that a one-point increase in empathy score was associated with a 0.701-point increase in patient satisfaction, reflecting a moderate to strong effect size. With an R^2 of 0.375, empathy alone explained more than one-third of the variance in satisfaction. However, some limitations should be noted: the single-center cross-sectional design may restrict generalizability, the use of consecutive sampling introduces potential selection bias, and reliance on self-reported measures raises the possibility of common-method bias. Furthermore, other SERVQUAL dimensions were not modeled in the regression, which may leave residual confounding. This study used a univariable model as the primary analysis because the focus was specifically on the effect of empathy on patient satisfaction. However, we acknowledge that patient characteristics such as age, sex, and dialysis vintage/frequency may also influence satisfaction, and future studies should explore adjusted models incorporating these covariates. These limitations should be considered when interpreting the findings.

While the general perception of empathy in this study was moderately positive, the differences in satisfaction

responses suggest that patients did not uniformly receive the same quality of interpersonal care. This indicates that empathy is still not being provided consistently and highlights the need for institutional initiatives to address and bridge these gaps. Establishing standardized guidelines, tracking empathetic communication using patient feedback, and incorporating empathy indicators into performance assessments could help reduce this inconsistency.

Future research should investigate interventions centered on empathy and examine their impact on measurable outcomes like treatment adherence, stress reduction, and patients' perceptions of recovery. Additionally, qualitative research could offer a more in-depth understanding of the specific behaviors or interactions that patients perceive as either empathetic or lacking empathy. Expanding the sample to include various hospitals or patient groups could further improve the generalizability of the results.

This study affirms that empathy plays a crucial role in shaping patient satisfaction within hemodialysis services. Prioritizing the cultivation and consistent implementation of empathetic care can contribute to more equitable, patient-centered outcomes and enhance the overall perception of healthcare quality. Strengthening empathy in routine practice may also foster stronger provider-patient relationships and improve long-term engagement with care.

CONCLUSION

This study shows that empathy is a crucial and impactful element in shaping patient satisfaction in hemodialysis care. The findings offer empirical support that the interpersonal dimensions of care, especially emotional attentiveness, active listening, and sincere concern from healthcare providers, are vital in influencing patients' overall care experiences. Recognizing and strengthening these aspects can lead to more meaningful and satisfying interactions between patients and healthcare teams.

By emphasizing empathy, this research advances the understanding of service quality in chronic care settings, moving beyond technical and procedural elements to highlight the psychological and emotional dimensions of treatment. The findings suggest that hospitals should incorporate empathy training and evaluation into staff development programs, especially in long-term, high-contact clinical environments like hemodialysis units.

Future research could explore empathy in broader and more diverse patient populations, assess its longitudinal impact on clinical outcomes, or investigate how digital health interventions might support empathetic communication. Experimental studies incorporating behavioral observations or patient-provider interaction analysis would also offer valuable insights into how

empathy can be operationalized and sustained in routine practice.

Ultimately, enhancing empathetic care has the potential to improve not only patient satisfaction but also treatment adherence, clinical effectiveness, and institutional reputation, making it a critical focus area for healthcare quality improvement initiatives.

CONFLICT OF INTEREST

The authors declare no conflicts of interest related to the conduct or publication of this study. There were no financial, personal, or institutional relationships that could be perceived to influence the results or interpretation of the research. No external funding sources were involved in the design, data collection, analysis, interpretation, manuscript preparation, or submission of this article. All authors had full access to the data and affirm that the sponsors had no role in the execution of the study.

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