

Determinants Of Patient Satisfaction With Nursing Care During Hemodialysis Treatment: A Systematic Review

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Abstract

Introduction: Hemodialysis is an essential life support for patients with end-stage chronic kidney disease. Within this process, nursing staff is the fundamental axis to guarantee technical safety and the patient's emotional well-being.

Objective: To identify the determining factors in patient satisfaction regarding nursing care during hemodialysis treatment.

Methodology: A PRISMA-guided systematic review was conducted using databases such as PubMed, SciELO, and ScienceDirect (2016-2026). Twenty-one original articles using SERVQUAL, SERVQHOS, or similar validated instruments were selected.

Results: Global satisfaction levels ranged from 67% to 99%. The highest-rated dimensions were humanized treatment, empathy, assertive communication, and nursing professionalism. Conversely, the greatest deficiencies and negative gaps were found in tangible elements, such as infrastructure, waiting times, and punctuality.

Discussion: Findings converge on the fact that the relational component and emotional support are critical pillars for a positive experience. However, dissatisfaction with logistical and structural factors of the healthcare system can bias the overall perception of the care received.

Conclusions: Patient satisfaction is a multidimensional construct where nursing care acts as the most impactful factor. It is necessary to harmonize clinical competence with humanized treatment and the optimization of hospital infrastructure to achieve excellence in care.

Keywords: hemodialysis; patient satisfaction; nursing care; quality of health care; SERVQUAL.

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Introduction

Hemodialysis is a kidney replacement therapy that enables blood to be filtered externally when the kidneys lose their functional capacity. This process is vital for people who reach end-stage chronic kidney disease because it facilitates the removal of metabolic toxins and excess fluid that the body can no longer eliminate on its own 1. Several conditions may lead to the need to initiate this life-sustaining therapy, with diabetes mellitus and arterial hypertension being the most common precursor diseases causing progressive deterioration of kidney function 2.

The procedure is performed through an extracorporeal circuit in which blood is pumped to a special filter called a dialyzer, where it comes into contact with a dialysis solution that enables substance exchange through diffusion and ultrafiltration to remove harmful compounds such as urea and potassium 3. Treatment is generally organized into periodic sessions lasting several hours and repeated several times per week in hospital units or specialized centers. Monitoring technical parameters and the patient's physical response is essential to prevent complications and ensure treatment effectiveness 4.

Within this process, nursing staff occupy a central role because they are directly responsible for managing treatment and accompanying the patient throughout the stay in the unit. Their work is not limited to operating the equipment; it also includes continuous monitoring to detect any alteration in the patient's hemodynamic status in a timely manner 5. Because the sessions are prolonged and recurrent, a close relationship develops between staff

and the patient under their care, making nursing the fundamental axis for ensuring both technical safety and emotional well-being 6.

In addition to direct care activities, the nursing role includes an educational and supportive dimension that is essential for adaptation to kidney disease. The nursing team guides patients in vascular-access self-care, dietary adherence, and fluid control, thereby promoting greater autonomy in daily life 7. This approach combines clinical expertise with communication skills and empathy, factors that are decisive in strengthening patients' trust in the service received and improving their overall treatment experience 5.

Patient satisfaction is therefore recognized as a reliable indicator for evaluating the quality of health services. This concept measures the extent to which the care received meets patient expectations, making it a tool that reflects the effectiveness of clinical services 8. For people receiving hemodialysis, satisfaction is not merely an administrative metric; it is a component that affects overall well-being and the way patients experience and manage their own health condition 9. This subjective assessment makes it possible to understand how the individual experiences the therapeutic process, which is essential for humanizing care in chronic disease 10.

To measure satisfaction in a structured manner, the scientific literature highlights standardized models that quantify patient perceptions, including SERVQUAL and SERVQHOS, which enable analysis of the gap between users' prior expectations and their actual perceptions after receiving the service 11. These tools examine five key

Determinants Of Patient Satisfaction With Nursing Care During Hemodialysis Treatment: A Systematic Review dimensions: reliability, responsiveness, assurance, empathy, and tangibles, thereby providing a comprehensive view of the elements that define quality in a healthcare organization or center 12.

Against this background, and in light of the preceding arguments, this study aims to identify the determinants of patient satisfaction with nursing care during hemodialysis treatment through a systematic literature review, seeking to integrate scientific findings to guide improvements in health services and professional practice and to strengthen patient well-being throughout the therapeutic process. In turn, to ensure the timeliness, rigor, and methodological homogeneity of the reviewed articles, priority will be given to studies from the 2016-2026 period that implemented SERVQUAL or SERVQHOS instruments within the context of interest, thereby enabling a structured and reliable comparison of perceived-quality indicators.

Methodology

A systematic review of the literature was conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, with the purpose of collecting, evaluating, and synthesizing the available scientific evidence published over the past ten years on the determinants of patient satisfaction with nursing care during hemodialysis treatment.

Information Sources and Search Strategy

The evidence-gathering process was conducted during April 2026 by consulting scientific repositories and databases specialized in health and social sciences, including PubMed, SciELO, ScienceDirect, MDPI, Dialnet, Redalyc, Google Scholar, and nursing platforms. To ensure a comprehensive search, the strategy was structured by combining controlled descriptors (MeSH/DeCS) related to the population, care, and assessment instruments: "Patient Satisfaction," "Renal Dialysis," "Hemodialysis," "Nursing Care," "SERVQUAL," "SERVQHOS," and "Health Care Quality," together with their equivalents in Spanish, rendered in English as "Patient Satisfaction," "Renal Dialysis," "Hemodialysis," "Nursing Care," "SERVQUAL," "SERVQHOS," and "Health Care Quality." Record retrieval was optimized through search equations constructed with the Boolean operators AND and OR.

Study Selection

Bibliographic records were selected according to eligibility criteria that included original studies with quantitative or mixed-method approaches published between 2016 and 2026. Articles published in Spanish or English that specifically addressed factors influencing satisfaction among patients with kidney disease were selected, with preference given to studies using SERVQUAL or SERVQHOS as the measurement framework. In contrast, review articles were excluded to avoid redundancy of primary data, as were editorials, unpublished degree theses, and studies assessing general satisfaction with a hospital center without disaggregating the specific nursing-care component.

The screening process began with the manual removal of duplicate records by cross-checking titles and metadata. This was followed by a screening phase based on reading titles and abstracts to exclude studies that were not

directly related to dimensions of perceived quality in hemodialysis. Reference lists of the selected studies were also searched to identify relevant documents that might have been omitted from the initial search. Finally, the full texts were critically reviewed to verify that they met the methodological rigor required for synthesis.

Selection Criteria

Inclusion Criteria

Original scientific articles published in English or Spanish in indexed, peer-reviewed, open-access journals between 2016 and 2026 were included. Eligible designs comprised cross-sectional, descriptive, cohort, or quasi-experimental studies providing statistical evidence and specifically analyzing and measuring patient satisfaction or perceived quality directly in relation to care provided by nursing staff, using SERVQUAL, SERVQHOS, or similar previously validated instruments in adult patients diagnosed with chronic kidney disease who were receiving hemodialysis treatment.

Exclusion Criteria

Qualitative studies, systematic reviews, meta-analyses, letters to the editor, editorials, and grey literature, including degree theses and non-indexed technical reports, were excluded. Studies analyzing satisfaction in peritoneal dialysis services or outpatient nephrology consultations were also excluded when data specific to the hemodialysis process could not be isolated, as were studies focused exclusively on clinical aspects of the disease (medical complications or laboratory results) or on the physical infrastructure of the center without assessing interaction with and direct care provided by nursing staff.

Data Synthesis and Analysis Process

The findings were integrated using a narrative synthesis approach supported by the development of a documentary systematization matrix, which enabled the technical information from the selected studies to be organized according to uniform parameters: author and year, study design, sample size, instruments used, dimensions evaluated, and main findings. This record facilitated a cross-sectional assessment of the evidence and enabled the identification of common patterns, discrepancies, and current trends in perceptions of the quality of nephrology care according to the hospital context.

Subsequently, an inductive and descriptive analysis was performed to establish thematic categories from the reviewed findings. This process involved comparing the results of the selected studies to identify recurring patterns, areas of dissatisfaction, and critical factors reported by patients in relation to nursing care. The final synthesis was therefore structured according to the quality components identified as relevant by the scientific evidence, allowing the nature of the collected data itself to determine the organization of the discussion.

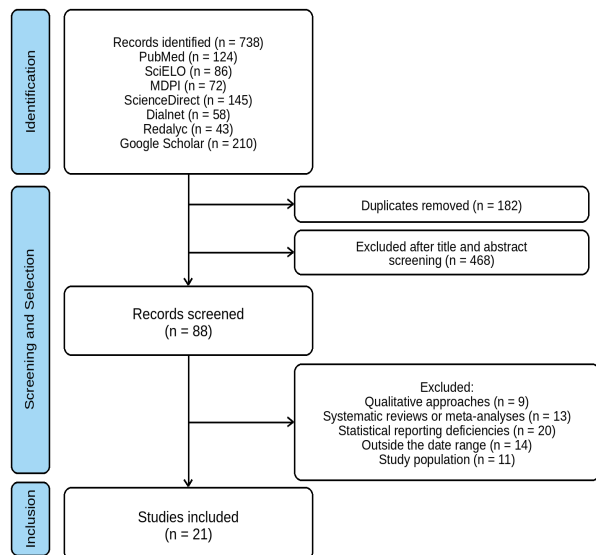
Initial Findings

The initial identification phase yielded a total of 738 records distributed across the digital repositories consulted: PubMed (124), SciELO (86), MDPI (72), ScienceDirect (145), Dialnet (58), Redalyc (43), and Google Scholar (210). After metadata cleaning, 182 duplicate articles found across the different databases were removed. This resulted in 556 records entering the

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title-and-abstract screening phase. During this first screening, 468 documents that were not directly related to the study objective or did not meet the thematic inclusion parameters were excluded (see Figure 1).

Figure 1: Article Search and Selection Process



Subsequently, 88 studies underwent a comprehensive full-text assessment to verify compliance with the established eligibility criteria. During this stage, 65 studies were excluded: 9 because they used a qualitative approach, 13 because they were systematic reviews, 20 because of deficiencies in the description of the statistical treatment of the data, 14 because they had been published outside the defined time range, and 11 because they focused on populations not receiving maintenance hemodialysis. At the end of this process, 21 original studies met all technical and methodological requirements and were included in the synthesis of results (see Figure 1).

Results

The analyzed articles included a total of 7,470 participants, all of whom were adults with chronic kidney disease receiving maintenance hemodialysis. The study populations were distributed across various public and private dialysis units, including high-complexity

hospitals and specialized renal clinics in diverse geographic settings. Sample sizes varied substantially, ranging from smaller studies with 40 participants to multicenter investigations including as many as 3,063 patients (see Table 1).

The evaluations focused primarily on measuring perceived quality through the use of SERVQUAL and SERVQHOS and their respective adaptations validated for healthcare settings. These instruments made it possible to disaggregate patient satisfaction into critical dimensions such as reliability, responsiveness, staff assurance, and empathy, as well as tangible elements related to infrastructure. In addition, nursing-care-specific scales were included, such as the Newcastle Satisfaction with Nursing Scale (NSNS), the Patient Perception of Nursing Care Scale, and the Hemodialysis Comfort Scale (HCS), which were designed to assess technical quality and humanized care during the therapeutic process (see Table 1).

Table 1: Selected Studies

Auth or and Year	Study Design	Sample Size	Instruments Used	Dimensions Evaluated	Main Findings
Bowen and Fosado (2020)	Quantitative, descriptive, and cross-sectional with a multivariate approach.	3,063 patients from 13 renal health centers in Ecuador.	Adapted SERVQUAL (Cronbach's alpha > 0.7).	Reliability, responsiveness, tangibles, assurance, and empathy.	Satisfaction was achieved only for "Empathy." The largest negative gap was found in "Tangibles."

Castro-Serralde and Cadenas-Antonio (2017)	Descriptive cross-sectional study.	300 patients with CKD.	Modified SERVQHOS (Cronbach's alpha = 0.90).	Communication, professionalism, and nursing care.	A total of 54% were very satisfied with communication and 31.3% with professionalism. Satisfaction was higher among patients with basic education.
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Castro-Serralde (2021)	Reliability and validation study.	59 patients receiving kidney replacement therapy.	Modified SERVQHOS (based on SERVQUAL).	Communication, professionalism, and nursing care.	The instrument demonstrated high internal consistency (Cronbach's alpha = 0.94). A good nurse-patient relationship, together with knowledge and experience, promotes patient satisfaction.		sectional study.				iveness (90.9%), reliability (59.1%), assurance (98.6%), empathy (98.9%), and tangibles (98.3%). The most highly rated aspects were kind treatment and respect for privacy and medical care. Shortcomings involved waiting times and medication stock.
Domare et al. (2024)	Quantitative, descriptive, cross-sectional study.	112 patients.	SERVQUAL.	Tangibles, reliability, responsiveness, assurance, communication, and access.	Overall satisfaction was high (26%). Responsiveness had the highest score (90.6%), while Communication had the lowest (46.9%).						
Fernandez et al. (2025)	Quantitative, descriptive-correlational, non-experimental, cross-	352 patients.	Modified SERVQUAL.	Reliability, responsiveness, assurance, empathy, and tangibles.	98% reported high satisfaction. Positive ratings were recorded for respons	Flores (2025)	Quantitative, descriptive, cross-sectional, non-experimental study.	78 patients with CKD.	SERVQHOS.	Infrastructure and service conditions; healthcare-staff care; information and communication.	67% satisfaction. Positive ratings: nursing information (68%); unit signage (73%); nursing interest (59%). Deficiencies: trust in staff (38%);

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					punctuality (39%); kindness and courtesy (40%); speed of care (40%).							ation: 4.4/5; Staff interest : 4.7/5; Operations: 4.6/5.
Garcia et al. (2016)	Descriptive cross-sectional study.	143 patients (50 receiving Hemodialysis and 93 receiving Peritoneal Dialysis).	Modified SERVQHOS .	Satisfaction, sociodemographic variables, and overall perception.	A total of 74% were very satisfied. In hemodialysis, staff appearance was rated positively, whereas information about medication was rated negatively.		Human-Carhuas et al. (2023)	Quantitative , non-experimental, descriptive-correlational, cross-sectional study.	60 patients with CKD.	Modified SERVQUAL (Cronbach's alpha 0.84).	Tangibles, reliability, responsiveness, assurance, empathy , and accessibility.	58.3% reported mild satisfaction. Completely satisfied: tangibles (76.7%); reliability (41.7%); responsiveness (60%); empathy (53.3%); assurance (40%); accessibility (35%).
Hammel et al. (2024)	Observational, descriptive, cross-sectional, multicenter study.	135 patients from 5 hospitals (81 Hemodialysis, 37 advanced CKD, 17 Peritoneal Dialysis).	Modified SERVQHOS .	Sociodemographic data, facilities , staff, operations, and specific care.	Overall hemodialysis satisfaction: 4.5/5. Dimension scores: Trust and assurance: 4.7/5; Professionalism: 4.7/5; Prevention information: 4.6/5; Vaccine inform		Martin (2016)	Observational, descriptive, cross-sectional study.	70 patients with chronic disease.	Modified SERVQHOS .	Kindness, appearance, trust, technical preparation, personalized treatment, and information (diet/medication).	Very satisfied: kindness and appearance (61.53 %); trust and assurance (76.9%); staff preparation (55.38 %); interest in solving problems (46.5%

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					); willingness to help (33.84 %); personalized treatment (32.30 %); understanding of needs (27.68 %). A high level of dissatisfaction was reported regarding dietary information.		Ramos-Ramirez et al. (2022)	Quantitative , observational, descriptive, cross-sectional, prospective study.	146 patients.	SERVQHOS-E.	Tangible and intangible aspects; overall satisfaction and service recommendation .	99.3% were satisfied with quality of care. Overall satisfaction was 100%. A total of 99.3% would recommend the service . The highest-rated attributes were equipment technology (94.1%) and facility comfort (88.8%). Deficiencies: waiting time and punctuality of sessions.
Quisp e and Jimenez (2023)	Observational, descriptive, multicenter, cross-sectional study.	201 participants.	Modified SERVQHOS .	Objective quality (facilities) and subjective quality (staff care).	88% overall satisfaction. Strengths: comfort of facilities, staff appearance, punctuality, staff willingness, kindness, and staff treatment. Weaknesses: accessibility and waiting time.							

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				sonal manner, communication , financial aspects, time with the physician, and accessibility.	and Tangibles (-0.38).							ions of caring behaviors and patient satisfaction.
Koon (2020)	Descriptive cross-sectional study.	345 patients and 94 nurses .	PSNC QQ-T.	Level of patient satisfaction with nursing care.	Overall level: 50.4% of patients reported a "very good" level of satisfaction. Highest dimension: nurses' attitudes of interest and caring (M = 4.1). Lowest dimension: provision of a calm and restorative atmosphere in the unit (M = 3.56). There was a strong positive relationship (r = 0.64) between percept		Rathinasa my et al. (2026)	Quantitative , cross-sectional, observational study.	232 patients.	Dialysis Symptom Index (DSI), SEMC D-6, and Arabic PSNC QQ.	Symptom burden, self-efficacy , and satisfaction with nursing care.	High satisfaction (90.2%). Highest scores: information provided by nurses (4.0/5), informing the family (4.02/5), nurses' concern and care (3.95/5), and attention to the patient's condition (3.97/5). Lowest : response to calls (3.81/5) and privacy (3.84/5).

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Helm y et al. (2022)	Prospective, cross-sectional, single-center study.	119 patients.	Structured questionnaire (4-point Likert scale); observational checklist.	Physician-patient personal interaction; care during the dialysis session; care before and after the session.	Overall satisfaction: Satisfied (Mean = 2.64). Physician-patient interaction: Satisfied (Mean = 2.7); highest satisfaction with nursing attitude (3.17), lowest with medical explanations (2.38). During dialysis : Satisfied (Mean = 2.83); dissatisfaction with the medical response to problems (2.39).					, procedures, and emotional support.	unit; 59.3% were very satisfied with attention to their needs; and 53.3% were very satisfied with nurses' courtesy, respect, and ability to provide comfort. Satisfaction was higher when clear procedural information and emotional support were provided.
Kaus er et al. (2018)	Descriptive analytical cross-sectional study.	150 patients.	Adopted self-administered structured questionnaire.	Levels of satisfaction with nursing care: welcome, attention, respect, comfort, communication	High overall satisfaction. A total of 66% were very satisfied with the welcome to the	Toral es et al. (2025)	Observational and descriptive study.	1,601 patients.	Adapted survey of 25 closed-ended questions (Likert-scale and dichotomous items).	Care and training; accessibility and delays; hygiene and facilities ; processes and services ; communication and work climate.	Overall satisfaction: 72.7%. By subdimension: Communication and work climate : 91.7%; Care and training: 75.6%; Processes and

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					service s: 70.4%; Access ibility and delays: 64.8%; Hygien e and adequa cy of facilitie s: 64.5%.
Varg as et al. (2025)	Obser vation al, descri ptive, cross- sectio nal study.	40 patien ts.	Modif ied test.	Sex, age, quality of care, and patient satisfact ion.	Overall satisfac tion level: 97.5%. Satisfa ction depend s on commu nicatio n, empath y, and emotio nal support .
Yaca n et al. (2025)	Descri ptive and cross- sectio nal study.	109 patien ts.	Hemo dialysi s Comf ort Scale (HCS) ; Newc	Comfort : Relief and Transce ndence. Satisfact ion: overall level of	Satisfa ction with nursing care was high. The mean

Evaluating the quality of health services through patient perceptions constitutes a critical management indicator in nephrology units. Accordingly, the purpose of this study was to analyze the factors that determine satisfaction among patients receiving hemodialysis in relation to nursing care. A systematic literature review was therefore conducted, synthesizing findings from 21 studies retrieved from databases including PubMed, SciELO, ScienceDirect, MDPI, Dialnet, Redalyc, and Google Scholar, published in English and Spanish during 2016-2026.

The analyzed studies converge in their use of validated measurement instruments, primarily adaptations of SERVQUAL and SERVQHOS, to objectify subjective dimensions of care and safety. Although the overall satisfaction levels reported in the literature are generally high, ranging from 67% to 99% and reaching a combined satisfaction level of 88% in multicenter studies, discrepancies between prior expectations and the actual service experience reveal persistent areas for structural improvement 13 14 15.

			astle Satisfa ction with Nursin g Scale (NSN S).	satisfact ion with the care received .	total NSNS score was 82.40 on a 100- point scale.
Yildi z et al. (2023)	Quant itative and descri ptive study.	50 patien ts.	Patien t Percep tion of Nursin g Care Scale.	Percepti on of individu alized care; satisfact ion with nursing care; quality of care.	Satisfa ction level was high, with a mean total score of 68.31 (scale range: 15-75). Access route: patient s with a fistula reporte d greater satisfac tion (media n 73) than those with a cathete r.

Discussion

In this regard, the interpersonal component emerges as the dimension with the greatest positive impact on the experience of patients with chronic illness. Assertive communication, humanized care, kindness, respect for privacy, and the professionalism of nursing staff are identified as the fundamental pillars supporting positive evaluations of the service across different hospital settings 16 17 18 19. These findings suggest that a strong nurse-patient relationship, characterized by empathy and the resolution of concerns, acts as a protective factor that can mitigate negative perceptions of other aspects 17 20 21 22.

The physical appearance and neat presentation of nursing staff also emerge as visual determinants of professionalism that generate initial trust in the recipient of care 15 18 23, together with the clear and consistent provision of information about medication, the dialysis process, and dietary restrictions, which patients regard as an essential element of technical competence 13 18 19 23. However, critical analysis of the results indicates that this satisfaction is not uniform and is influenced by

sociodemographic variables such as educational level or employment status; patients with lower levels of education tend to report higher satisfaction 13 16.

Conversely, the greatest deficiencies are repeatedly concentrated in the tangibles dimension and in the operational management of the units. Excessive waiting times, lack of punctuality in hemodialysis sessions, and limitations in physical infrastructure represent the most significant negative gaps in perceived quality 13 14 17 20 24. Even in settings where direct care is highly valued, external factors such as hygiene, accessibility of the center, and environmental comfort reduce overall ratings 15 17. This duality shows that although healthcare staff performance meets care demands, health systems face critical difficulties in optimizing the physical and logistical environment required for care 25.

The analyzed evidence therefore indicates that the quality of nephrology care is conditioned by a balance between professional performance and institutional limitations, such that satisfaction depends not only on the technical procedure of hemodialysis but also on the entire underlying structure associated with this treatment. Responsiveness, assurance, and staff reliability are shared strengths across studies from different regions 17 18 19 22 25, whereas persistent shortcomings in tangibles and accessibility highlight insufficient attention to patients' comfort and transportation needs 15 20 22.

Furthermore, to broaden the perspective of this review and strengthen understanding of the determinants of patient satisfaction, it is useful to examine the results of studies that employed assessment instruments and methods other than SERVQUAL and SERVQHOS. This integration makes it possible to determine whether previously identified quality dimensions remain relevant under other theoretical frameworks and whether new critical elements emerge that influence perceptions of nursing care in the hemodialysis setting.

Comparison of the studies reveals substantial convergence regarding the importance of the human and relational component. For example, in his study, Koon²⁶ established a strong positive correlation between caring behaviors and patient satisfaction, reinforcing the idea that, regardless of the instrument used, the clinical attitude and emotional support provided by nursing staff are fundamental pillars of a positive treatment experience. Similarly, Vargas et al.²⁷ report that dignified treatment, empathy, and effective communication not only increase satisfaction but are also determinants of self-care promotion and therapeutic adherence.

The use of specific tools such as the Newcastle scale (NSNS) has also made it possible to identify particular nuances in satisfaction. Yacan et al.²⁸ reported high levels of satisfaction with nursing care, emphasizing that variables such as respect for privacy and time devoted to listening are valued by patients more highly than certain technical aspects. This is consistent with the findings of Yildiz et al.²⁹, who found that patients receiving hemodialysis tend to perceive care more favorably when they feel that the nursing professional individualizes care and recognizes their specific needs beyond the procedure of connecting them to the machine. This is also consistent with the findings reported by Kauser et al.³⁰ and Rathinasamy et al.³¹.

Nevertheless, when the methodology is diversified, structural barriers emerge that are often diluted within general quality scales. Torales et al.³² found that satisfaction is seriously compromised by factors external to nursing staff, including shortages of medical supplies, transportation difficulties, and long waiting times before the start of a session. These results suggest that even when nursing care is rated as excellent, dissatisfaction with the healthcare system as a whole may bias patient perceptions. This view is shared by Helmy et al.³³, who showed that facility infrastructure and cleanliness are critical predictors of overall satisfaction.

Information provided to the patient again emerges as a determinant of care quality. According to Kauser et al.³⁰, perceived quality is significantly higher when patients receive clear information about treatment accompanied by emotional support. The importance of this informational dimension is confirmed by Rathinasamy et al.³¹, whose findings show outstanding scores for information provided by nurses and communication directed toward family members, thereby consolidating the nursing role as the principal coordinating link among the patient, the immediate social environment, and the clinical process.

It is important to acknowledge the effect of the methodological heterogeneity of the studies included in this review. Although studies applying models such as SERVQUAL and SERVQHOS, or similar instruments, were analyzed to assess patient satisfaction, disparities in sample sizes and the diversity of geographic and regulatory contexts introduced contextual bias that affects the comparability of results. These differences in measurement criteria limit the scope of the analysis; therefore, the determinants of satisfaction should be interpreted cautiously, considering that the relative importance of each factor may vary according to the instrument used and the care setting.

With regard to future research, priority should be given to longitudinal studies evaluating how patient satisfaction changes over the years of treatment and linking these results with objective clinical indicators of morbidity, mortality, and therapeutic adherence. Mixed-method studies are also needed to explore the phenomenological dimension of humanized care in greater depth, thereby making it possible to isolate the impact of continuing nursing education on patients' perceptions of safety.

Multicenter studies should also be encouraged to compare the efficiency of different logistical configurations (transport times, supply management, and nurse-to-patient ratios) and determine their specific weight relative to technical competence. Finally, validation of digital tools for real-time assessment of care is needed to guide more dynamic quality-management strategies adapted to the changing realities of hemodialysis units.

Conclusions

The systematic review of the included studies shows that satisfaction among patients receiving hemodialysis is a multidimensional construct in which nursing care acts as the determinant with the greatest impact on perceived quality. It is concluded that satisfaction depends not only on the technical success of the dialysis procedure, but also on the ability of nursing staff to integrate clinical competence with humanized care. The dimensions of

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reliability and responsiveness, evaluated through models such as SERVQUAL and Watson's theory, indicate that continuous support, patient-safety monitoring, and willingness to help are the elements most strongly associated with a positive treatment experience. Likewise, the informational dimension and emotional support emerge as critical pillars for reducing the burden of disease and improving adherence. Providing clear and timely information about medication, vascular-access self-care, and dietary restrictions not only increases satisfaction levels but also empowers patients in managing their condition. Effective communication, extended to the family environment, and an empathetic nursing attitude are identified as determinants for mitigating the psychological impact of therapy; patients may value these factors even more highly than the technological sophistication of medical equipment. Finally, structural and external factors, including unit infrastructure, cleanliness, availability of supplies, and waiting-time management, act as moderators of overall satisfaction and may influence perceptions of professional care. In resource-limited settings, logistical deficiencies are observed to be the main causes of dissatisfaction, underscoring the need for health-service management to ensure optimal environmental conditions. Ultimately, achieving excellence in nephrology care requires a management model that harmonizes the development of interpersonal skills among staff, the standardization of educational processes, and the strengthening of hospital infrastructure.

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