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Factors that influence patients' non-adherence to dialysis treatment regimens

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Abstract

This study aimed to explore factors that influence patient's adherence to dialysis treatment regimens at City of Ilagan Medical Center (CIMC-HDU) and Isabela Provincial Hospital (IPH-HDU). A quantitative research design employing a descriptive survey approach was utilized. Data were collected from 100 dialysis patients using an adapted structured questionnaire. Purposive sampling was used to select patients in two hospitals. Frequency and percentage distribution, weighted mean, t-test, and ANOVA were used to analyze gathered data. The results reveal that the majority of dialysis patients are between the ages of 44 and 53, predominantly male, married, and identify as Roman Catholic, college graduates, and have a monthly income of less than 20,000 pesos per month. The respondents highly recognize that health reasons, financial constraints, and family-related barriers emerged as the most significant contributors to their non-adherence to dialysis treatment regimen. They also identified additional factors, including personal reasons, transportation difficulties, and scheduling conflicts with other medical appointments, all of which disrupt adherence. The findings of the study also revealed significant differences when examining adherence factors by age, particularly in relation to personal reasons, other medical appointments, and financial constraints. On the other hand, the findings demonstrated no statistically significant differences in adherence factors based on sex, civil status, religion, ethnicity, educational attainment, or average monthly family income, suggesting that these demographic variables do not directly influence patients' non-adherence to dialysis treatment regimens. These findings highlight the importance of tailored interventions addressing these factors to enhance hemodialysis adherence and ultimately improve patient outcomes in this population.

Keywords: factors, non-adherence, dialysis treatment regimen, health issues, family reasons, personal reasons

Factors that influence patients' non-adherence to dialysis treatment regimens

1. Introduction

End-stage renal disease (ESRD), also known as kidney failure, is a debilitating condition that affects a growing number of individuals worldwide. To manage this condition, dialysis treatment plays a pivotal role in prolonging patients' lives and maintaining their overall health. Adherence is defined as "the extent to which a person's attitude matches with the agreed recommendations of a healthcare giver in terms of taking medications, following a recommended diet regimen and/or carrying out lifestyle changes." Adherence to medications is a major challenge in patients with chronic diseases since non-adherence to was usually associated with disease deterioration and increased hospital admissions.

Non-adherence to treatment is a common behavior among patients with ESRD, which has been associated with unfavorable consequences, such as bone demineralization, pulmonary edema, metabolic disorders, and increased mortality. In Dialysis Outcomes and Practice Patterns Study (DOPPS), a large prospective observational study for the outcomes of hemodialysis practice, non-adherence to hemodialysis (HD), dietary and fluid restrictions, and medical treatment were significantly associated with increased hospital admissions and mortality. However, adherence to dialysis treatment regimens presents a significant challenge for patients, which can have profound consequences on treatment effectiveness and overall patient outcomes. It is therefore crucial to investigate the factors that influence patient adherence to dialysis treatment in order to develop targeted interventions and improve treatment outcomes. The purpose of this research proposal is to explore the various factors that influence a patient's adherence to dialysis treatment regimens. By identifying these factors, healthcare providers and policymakers can gain a deeper understanding of the barriers and facilitators to adherence, and develop evidence-based strategies to support patients in adhering to their treatment plans.

Objectives of the Study - This study generally aimed to explore the factors that influence patients' non-adherence to dialysis treatment regimens at the City of Ilagan Medical Center (CIMC-HDU) and the Isabela Provincial Hospital (IPH-HDU). Specifically, it sought to determine the demographic profile of the respondents in terms of age, sex, civil status, religion, ethnicity, educational attainment, and average monthly family income. It also aimed to identify the factors contributing to the respondents' non-adherence to dialysis treatment, particularly in relation to health issues, family reasons, personal reasons, transportation difficulties, other medical appointments, and financial constraints. Furthermore, the study intended to determine whether there is a significant difference in the factors influencing dialysis adherence when respondents are grouped according to their demographic profile. Lastly, the study aimed to propose appropriate measures to improve adherence to dialysis treatment among the respondents.

2. Methods

Research Design - The study utilized a descriptive research design. A descriptive research design was appropriate for the study because it allowed the researcher to systematically describe and analyze the factors influencing patients' adherence to hemodialysis treatment without manipulating variables or establishing causation. This design enabled the researchers to gather comprehensive data about various factors such as socioeconomic status, social support, healthcare access, and treatment regimen complexity, providing a detailed understanding of the phenomenon under investigation. Descriptive research allowed for the exploration of the significant difference in the factors and adherence levels, providing valuable insights for healthcare providers and policymakers in developing interventions to improve patient adherence and healthcare outcomes in hemodialysis settings.

Study Sites and Participants - The study was conducted in the hospitals offering hemodialysis treatment,

namely: City of Ilagan Medical Center CIMC-HDU and Isabela Provincial Hospital IPH-HDU. CIMC is a 100-bed capacity and a 2nd level hospital classification which is operated by the City of Ilagan. Meanwhile, IPH has a bed capacity from 100 to 200 and it is level 3 category (Tertiary). The participants were the actual patients receiving dialysis treatment in the said health care facilities. There was a total of 50 patients from the two health care institutions.

Population, Sample Size, and Sampling Method - The participants in this study were comprised of individuals currently undergoing dialysis treatment at the specified healthcare facilities, namely CIMC and IPH. The study included a total of 100 patients (50 patients for CIMC and 50 patients for IPH) selected from these two healthcare institutions. To allow for a thorough examination and analysis of the entire population, providing accurate estimates and averages for various parameters, a total enumeration sampling was employed.

Instrument of the Study - The researcher used an adapted questionnaire. The questionnaire had two (2) parts: Part 1 consisted of the demographic profile of the participants in terms of age, sex, civil status, religion, ethnicity, educational attainment, average monthly family income, distance to the dialysis center, period on dialysis, and prescribed dialysis sessions/week. Part 2 comprised of statements on factors affecting adherence to dialysis treatment. The researcher adopted the questionnaire from the study of Alhamad et al. (2023) titled "Factors Affecting Adherence to Hemodialysis Therapy Among Patients With End-Stage Renal Disease Attending In-Center Hemodialysis in Al-Ahsa Region, Saudi Arabia." This questionnaire included variables such as health issues, family reasons, personal reasons, transportation difficulties, other medical appointments, and financial constraints.

Since there was a modification or addition in the questionnaire, the researcher conducted validity and reliability testing. The questionnaire was pilot tested to at least 10 nurses not part of the study. The Cronbach's Alpha coefficients indicate the reliability of the factors influencing adherence to dialysis treatment. In general, Cronbach's Alpha values range from 0 to 1, with higher values suggesting greater consistency among the items measuring each factor. Values above 0.7 are typically considered acceptable, and values above 0.8 are considered excellent. The coefficients in this case fall within the acceptable to excellent range, meaning the factors being measured—such as health issues (a=0.790), family reasons (a=0.846), personal reasons (a=0.766), transportation difficulties (0.897), other medical appointments (0.820) and financial constraints (0.875)—were consistently represented by the items in the questionnaire. This suggested that the questionnaire was reliable for assessing the different factors influencing adherence to dialysis treatment.

Data Gathering Procedure - The researcher first formulated the research proposal and the research instrument, which were then submitted to the adviser, Dean, and Research Director for review and approval. After the structured questionnaire was validated, revised, and approved by the adviser, the researcher sought formal approval from the Dean of the Graduate School to proceed with the conduct of the study. Upon receiving this approval, a request letter was sent to the Hemodialysis Unit facilities, asking for permission to conduct the study and to seek participation from their patients. Once permission was granted, the researcher reproduced the validated questionnaire and personally distributed it to the participants. Before the participants accomplished the questionnaire, the researcher clearly explained the purpose of the study and emphasized the participants' rights, in accordance with ethical research considerations. The questionnaires, along with the consent forms, were then distributed, and after a period of time, retrieved for analysis. The responses were tallied and subjected to statistical treatment and analysis. For data analysis, the collected responses were processed using SPSS Statistical Software.

Frequency and percentage distribution were used to identify the participants' profiles, including age, sex, civil status, religion, ethnicity, educational attainment, average monthly family income, distance to the dialysis center, period on dialysis, and prescribed dialysis sessions per week. The mean was utilized to determine the degree to which various factors—such as health issues, family reasons, personal reasons, transportation difficulties, other medical appointments, and financial constraints—influenced the participants' adherence to

dialysis treatment regimens. Lastly, t-test and ANOVA were employed to determine if there were significant differences in the influencing factors when participants were grouped according to their profile variables.

Ethical Considerations - Ethical considerations in research go beyond data analysis and span the entire research process. Obtaining informed consent is essential—participants must understand the study's purpose, risks, and benefits, and voluntarily agree to take part. Protecting patient privacy and confidentiality is equally important, which involves anonymizing data and following data protection laws and institutional policies. Researchers must maintain integrity during analysis by being objective, avoiding bias, and reporting results accurately and transparently. Special care should be taken when handling sensitive information, such as medical or socio-demographic data, by ensuring secure storage and limited access. It is also vital to weigh potential risks and benefits, aiming to improve patient outcomes while minimizing harm. When publishing findings, researchers must clearly explain their methodology, data, and limitations, avoiding overgeneralizations that could mislead. A

3. Results

Table 1
Demographic Profile of the Respondents

Age	Frequency	Percentage
14-18 years old	1	1.0
19-23 years old	6	6.0
24-28 years old	5	5.0
29-33 years old	6	6.0
34-38 years old	6	6.0
39-43 years old	8	8.0
44-48 years old	17	17.0
49-53 years old	23	23.0
54-58 years old	15	15.0
59 years old and above	13	13.0
Sex		
Male	71	71.0
Female	29	29.0
Civil Status		
Single	33	33.0
Married	66	66.0
Widowed	1	1.0
Religion		
Roman Catholic	51	51.0
Muslim	1	1.0
Born Again	19	19.0
Methodist	3	3.0
Iglesia Ni Cristo	26	26.0
Ethnicity		
Tagalog	10	10.0
Ilocano	70	70.0
Cebuano	3	3.0
Bicolano	5	5.0
Kapampangan	3	3.0
Ybanag	9	9.0
Educational Attainment		
College Graduate	12	12.0
College Level	54	54.0
High School Graduate	33	33.0
Others/ Vocational Course	1	1.0
Average Monthly Family Income		
Less than 10,000-20,000 pesos	75	75.0
20,001-30,000 pesos	19	19.0
30,001-40,000 pesos	6	6.0
Total	100	100

Table 1 revealed the demographic profile of the respondents which are crucial for understanding factors influencing adherence to dialysis treatment regimens. The age distribution indicates that the majority of

participants are aged 44 to 53 years, with 23% in the 49 to 53 age range and 17% in the 44 to 48 range, suggesting that dialysis treatment primarily affects older individuals. In terms of gender, there is a notable disparity, with 70% of participants being male and 30% female, which may impact health-seeking behaviors and adherence rates.

Civil status shows that 66% of participants are married, potentially providing a supportive network that could enhance adherence to treatment. The religious affiliations indicate that 51% identify as Roman Catholic, with significant representation from Iglesia Ni Cristo (26%) and Born-Again Christians (19%), suggesting that religious beliefs may influence patients' attitudes toward health and adherence. Ethnically, the sample is predominantly Ilocano (70%), with Tagalog making up 10% of participants; this highlights potential cultural influences on treatment adherence. Regarding educational attainment, 54% of participants are at the college level, while 33% are high school graduates. This correlation between education level and health literacy could play a critical role in understanding treatment regimens. The average monthly income reveals that 75% earn less than 20,000 pesos, suggesting that economic constraints may limit access to healthcare resources and negatively impact adherence to treatment.

Table 2
Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Health Issues

	Statements	Mean	Interpretation
1	Complications such as infections, blood clots, and access site issues can disrupt dialysis sessions and contribute to non-adherence.	3.61	Highly Recognized
2	Dialysis-related symptoms such as fatigue, nausea, and muscle cramps can be uncomfortable and disruptive, discouraging me from adhering to the treatment regimens.	3.62	Highly Recognized
3	Mental health issues such as depression, anxiety, and stress can affect my motivation and resilience, leading to non-adherence to dialysis treatment.	3.33	Highly Recognized
4	Comorbid conditions such as diabetes, hypertension, and cardiovascular disease can complicate my treatment regimens and increase the risk of non-adherence.	3.61	Highly Recognized
5	Chronic pain and discomfort associated with dialysis procedures can deter me from adhering to their treatment regimens.	3.44	Highly Recognized
	Category Mean	3.52	Highly Recognized

Table 2 indicates the health-related issues that influence non-adherence to dialysis treatment regimens. As shown, the mean scores for all the statements suggest a strong recognition that these contribute to the non-adherence of the participants to the treatment regimen. Dialysis-related symptoms like fatigue, nausea, and muscle cramps (Mean=3.62) are highly recognized as uncomfortable and disruptive, making it difficult for individuals to adhere to treatment. Similarly, complications such as infections, blood clots, and access site issues (Mean=3.61) are viewed as major disruptions to dialysis sessions, contributing to non-adherence. Co-morbid conditions like diabetes, hypertension, and cardiovascular disease (Mean=3.60) complicate treatment regimens and increase the likelihood of non-adherence. Chronic pain and discomfort associated with dialysis procedures (Mean=3.44) further deter adherence, though this factor shows a bit more variation in participants' responses. Mental health issues such as depression, anxiety, and stress (Mean=3.33) are also seen as significant barriers affecting motivation and resilience, although with slightly more variability in responses. Overall, the category mean of 3.52 emphasizes that participants highly recognize that these health-related factors significantly contribute to non-adherence to dialysis treatments. This finding highlights the importance of addressing these health challenges as a key strategy to enhance patient adherence to dialysis regimens, ultimately improving treatment outcomes and quality of care.

Table 3 shows family-related factors affect non-adherence to dialysis treatment. As reflected, respondents highly recognize that a family members' lack of knowledge about dietary and fluid intake restrictions (Mean=3.30, SD=0.689), lack of social support (Mean=3.29, SD=0.743), inadequate family understanding of treatment importance (Mean=3.29, SD=0.820), family conflicts or responsibilities (Mean=3.26, SD=0.799), and all contribute to non-adherence. Additionally, family dynamics and communication patterns that do not prioritize healthcare needs (Mean=3.26, SD=0.760) are also seen as barriers to adherence. The overall mean of 3.28

highlights the significance of family support and understanding as key factors in promoting consistent adherence to dialysis regimens. This suggests the vital role that a supportive family environment plays in encouraging patients to maintain their treatment schedules and overcome challenges associated with dialysis.

Table 3

Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Family Reasons

Statements	Mean	Interpretation
Lack of social support from family members, friends, or healthcare providers may leave me feeling isolated and overwhelmed, reducing my motivation to adhere to the treatment regimens.	3.29	Highly Recognized
Inadequate family support or lack of understanding about the importance of dialysis treatment can contribute to my non-adherence.	3.29	Highly Recognized
Family conflicts or responsibilities may interfere with my ability to attend dialysis sessions regularly, resulting in non-adherence.	3.26	Highly Recognized
Family members' lack of knowledge about dietary restrictions and fluid intake limitations necessary may inadvertently contribute to non-adherence.	3.30	Highly Recognized
Family dynamics and communication patterns that do not prioritize my healthcare needs or treatment adherence can impede my ability to follow the dialysis regimens.	3.26	Highly Recognized
Category Mean	3.28	Highly Recognized

Table 4

Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Personal Reasons

Statements	Mean	Interpretation
Forgetfulness or lack of awareness about the importance of adhering to dialysis treatment regimens can lead to non-adherence.	3.35	Highly Recognized
Lack of self-discipline or motivation to maintain a healthy lifestyle can contribute to non-adherence among patients undergoing dialysis.	3.50	Highly Recognized
Negative past experiences with healthcare providers or dialysis facilities may create distrust or reluctance to engage in treatment, resulting in non-adherence.	3.11	Recognized
Feelings of hopelessness or resignation about the prognosis, leading to non-adherence as dialysis treatment is perceived as futile or burdensome.	3.07	Recognized
Feelings of denial or resistance to accepting the diagnosis of end-stage renal disease (ESRD), leading to non-adherence to prescribed dialysis treatments.	3.12	Recognized
Category Mean	3.23	Recognized

Table 4 shows the factors influencing patients' non-adherence to dialysis treatment regimen as to personal reasons. The data reveal that personal reasons significantly influence adherence to dialysis treatment. Participants highly recognize that a lack of self-discipline or motivation to maintain a healthy lifestyle (Mean=3.50) and forgetfulness or a lack of awareness about the importance of adhering to treatment (Mean=3.35), contribute to non-adherence. Moreover, they recognize that feelings of denial or resistance to accepting the diagnosis of end-stage renal disease (Mean=3.12) are viewed as barriers to treatment adherence, negative past experiences with healthcare providers or dialysis facilities (Mean=3.11) may create distrust, while feelings of hopelessness or resignation about the prognosis (Mean=3.07) can also lead to non-adherence. The overall mean of 3.23 suggests that personal factors, such as motivation, past experiences, and emotional responses, play a major role in determining adherence to dialysis regimens. Motivation influences a patient's willingness to follow through with the demanding schedule of dialysis treatments, while past experiences, both positive and negative, shape their attitudes and perceptions toward the therapy. Emotional responses, including feelings of anxiety, frustration, or acceptance, further impact the consistency of their adherence. This result highlights the importance of addressing personal barriers through individualized support, counseling, and motivational strategies to enhance compliance and ultimately improve patient outcomes.

Table 5 reveals the transportation difficulties as a significant barrier to adherence to dialysis treatment. It can be gleaned that respondents highly recognize that transportation costs, including fuel or public transit fares (Mean=3.25), are seen as financial barriers that exacerbate non-adherence. In addition, they recognize that transportation difficulties (Mean=3.22) contribute to feelings of frustration, stress, and helplessness, further reducing motivation to adhere to treatment, limited access to reliable transportation options (Mean=3.15) and the lack of access to public or private vehicles (Mean=3.13) create challenges in attending scheduled dialysis

sessions. Also, reliance on unreliable transportation services (Mean=3.11) can lead to missed appointments due to unpredictable travel times.

Table 5
Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Transportation Difficulties

Statements	Mean	Interpretation
Limited access to reliable transportation options can pose significant challenges in attending scheduled dialysis treatments.	3.15	Recognized
Lack of access to public transportation or private vehicles can restrict the ability to travel to dialysis appointments, leading to missed sessions.	3.13	Recognized
Transportation costs, including fuel expenses or public transit fares, may pose financial barriers, exacerbating transportation difficulties and non-adherence.	3.25	Highly Recognized
Reliance on unreliable or inconsistent transportation services, such as ride sharing or community transport programs, can result in unpredictable travel times and missed dialysis appointments.	3.11	Recognized
Transportation difficulties can contribute to feelings of frustration, stress, and helplessness, further impacting the motivation and ability to adhere to dialysis treatment regimens.	3.22	Recognized
Category Mean	3.17	Recognized

The overall mean of 3.17 indicates that transportation-related issues are a notable factor contributing to non-adherence to dialysis treatment. This score reflects the challenges many patients face in accessing reliable and affordable transportation to attend their regular dialysis sessions. For many individuals, especially those in rural or under-served areas, transportation barriers can lead to missed appointments, delayed treatments, and overall disruption in their care. The implications of this mean suggest that without viable transportation solutions, patients may struggle to maintain their treatment schedules, which can adversely affect their health outcomes.

Table 6
Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Other Medical Appointments

	Statements	Mean	Interpretation
1	Scheduling conflicts between dialysis treatments and other medical appointments may lead to prioritizing one over the other, resulting in non-adherence to dialysis treatment regimens.	3.14	Recognized
2	Long wait times or delays at medical appointments may cause to miss or arrive late for the scheduled dialysis sessions, contributing to non-adherence.	3.09	Recognized
3	Fatigue or physical discomfort after attending multiple medical appointments, reducing the motivation or ability to adhere to dialysis treatment regimens.	3.17	Recognized
4	Conflicting medical advice or treatment recommendations from different healthcare providers may confuse patients and contribute to uncertainty about the importance of dialysis treatments relative to other medical appointments.	3.14	Recognized
5	Lack of coordination or communication between healthcare providers involved in the patient's care may result in overlapping or conflicting appointment schedules, making it challenging for patients to prioritize dialysis treatments.	3.13	Recognized
	Category Mean	3.13	Recognized

As revealed in Table 6, conflicts with other medical appointments significantly impact adherence to dialysis treatment. The respondents recognize that fatigue or physical discomfort after attending multiple medical appointments (Mean=3.17) reduces motivation to adhere to dialysis treatments, scheduling conflicts between dialysis and other medical appointments may lead to prioritizing one over the other, resulting in missed dialysis sessions. Conflicting medical advice or treatment recommendations (Mean=3.14) can also create confusion and uncertainty about the relative importance of dialysis. Additionally, lack of coordination or communication between healthcare providers (Mean=3.13) may lead to overlapping or conflicting appointment schedules, complicating adherence. Moreover, long wait times or delays at medical appointments (Mean=3.09) can cause patients to miss or arrive late for dialysis, further contributing to non-adherence. The overall mean of 3.13 indicates that issues related to other medical appointments represent a significant barrier to consistent adherence to dialysis regimens. This highlights the importance of improving coordination and scheduling management to ensure that patients can meet their dialysis commitments without conflicting healthcare obligations. Addressing this challenge through better integration of care and optimized appointment scheduling could enhance treatment adherence and overall patient outcomes.

Table 7
Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen as to Financial Constraints

	Statements	Mean	Interpretation
1	Financial constraints, including high treatment costs, medication expenses, and transportation expenses to dialysis centers, can hinder my ability to adhere to the treatment regimens.	3.32	Highly Recognized
2	High out-of-pocket expenses associated with dialysis treatments, including transportation costs, co-payments, and medication expenses, can deter me from attending appointments regularly.	3.26	Highly Recognized
3	Limited access to affordable healthcare services and facilities in under-served areas exacerbates financial challenges for me, resulting in non-adherence to dialysis regimens.	3.23	Highly Recognized
4	Financial instability or unemployment may prevent me from affording necessary medications and adhering to dietary restrictions recommended for dialysis treatment, contributing to non-adherence.	3.31	Highly Recognized
5	Lack of insurance coverage or inadequate insurance plans may result in patients having to bear the full financial burden of dialysis treatments, leading to non-adherence due to cost concerns.	3.11	Recognized
	Category Mean	3.25	Highly Recognized

As shown in Table 7, statements on financial constraints are a significant factor influencing adherence to dialysis treatment. The respondents highly recognize that financial challenges, including high treatment costs, medication expenses, and transportation costs (Mean=3.32), can hinder their ability to adhere to treatment regimens. Financial instability or unemployment (Mean=3.31) may prevent patients from affording medications and adhering to dietary restrictions, contributing to non-adherence. High out-of-pocket expenses, such as co-payments and medication costs (Mean=3.26), can also deter regular attendance at dialysis appointments. Limited access to affordable healthcare services in under-served areas (Mean=3.23) further exacerbates financial difficulties, leading to non-adherence. Additionally, lack of insurance coverage or inadequate insurance plans (Mean=3.11) can result in patients bearing the full financial burden, making it difficult to afford treatments. The overall mean of 3.25 suggests that financial constraints are a significant barrier to dialysis adherence, with issues such as high treatment and medication costs, lack of insurance, and financial instability contributing to non-adherence, emphasizing the need for financial support and improved insurance coverage to ensure consistent treatment.

Table 8
Summary of the Factors Influencing Patients' Non-Adherence to Dialysis Treatment Regimen

Factors		Mean	Interpretation
1.	Health Issues	3.52	Highly Recognized
2.	Family Reasons	3.28	Highly Recognized
3.	Personal Reasons	3.23	Recognized
4.	Transportation Difficulties	3.17	Recognized
5.	Other Medical Appointments	3.13	Recognized
6.	Financial Constraints	3.25	Highly Recognized
	Overall Mean	3.26	Highly Recognized

The summary of factors influencing patients' non-adherence to dialysis treatment regimen provides valuable insights into the underlying reasons patients may fail to consistently follow prescribed treatment plans. These factors are assessed based on their mean scores, which indicate the level of recognition or significance attributed to each factor by the respondents. The overall mean score of 3.26, categorized as "Highly Recognized," suggests that these factors are generally acknowledged as critical barriers to adherence, with a few particular factors standing out as particularly influential.

Health Issues emerged as the most significant factor contributing to non-adherence, with a mean score of 3.52, categorized as "Highly Recognized." This suggests that patients view their own health conditions, such as the severity of kidney disease or other comorbidities, as a primary challenge to adhering to their dialysis regimen. **Family Reasons** ranked second, with a mean of 3.28, and was also categorized as "Highly Recognized." This indicates that family-related issues, such as care giving responsibilities, family conflicts, or lack of support, play a significant role in patients' ability to adhere to dialysis treatment. **Personal Reasons** (Mean=3.23), including

factors such as personal preferences, lack of motivation, or psychological barriers, were also recognized as contributing to non-adherence, though to a slightly lesser extent. The recognition of personal reasons highlights the importance of addressing patients' mental health, attitudes, and behaviors in managing chronic conditions. Factors such as **Transportation Difficulties** (Mean=3.17), **Other Medical Appointments** (Mean=3.13), and **Financial Constraints** (Mean=3.25) were all recognized, with mean scores falling between "Recognized" and "Highly Recognized." These findings underscore the practical and logistical barriers that patients face in attending dialysis sessions. Transportation issues can limit access to healthcare, particularly in rural areas, while financial constraints often prevent patients from affording regular treatments or necessary medications.

Table 9
One-way ANOVA on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens when grouped according to Age

Age	N	M	SD	df	F	p-value	Decision	Interpretation
Overall								
19-23 years old	6	3.72	0.47	8	2.961	0.005	Reject	Significant
24-28 years old	5	3.77	0.25					
29-33 years old	6	3.30	0.38					
34-38 years old	6	3.45	0.44					
39-43 years old	8	3.08	0.57					
44-48 years old	17	3.23	0.30					
49-53 years old	23	3.22	0.44					
54-58 years old	15	2.97	0.41					
59 years old and above	13	3.31	0.52					

Note: *14–18-year-old respondents was excluded from the analysis due to its sample size.*

Table 9 presents the results of a statistical test examining the significant differences in the factors influencing patients' non-adherence to dialysis treatment regimens when they are grouped by age. A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on age. The results indicated significant differences among the respondents in these influencing factors, specifically regarding personal reasons ($F=3.489$, $p=0.001$), other medical appointments ($F=2.702$, $p=0.010$), financial constraints ($F=2.799$, $p=0.008$), and overall adherence ($F=2.961$, $p=0.005$). However, no significant differences were observed in other categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was rejected at the 0.05 significance level. Post hoc Scheffé tests indicated that respondents aged 54-58 showed significant differences from other age groups in the factors influencing their adherence to dialysis treatment regimens across the categories of personal reasons, other medical appointments, financial constraints, and overall adherence. These age-related differences could be attributed to the increased burden of comorbidities and the likelihood of encountering more complex health, financial, and logistical difficulties as individuals age. The finding that older respondents are more influenced by these factors suggests that interventions aimed at improving dialysis adherence should be tailored to address the specific needs of this age group.

A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on religion. The results indicated no significant differences in the factors influencing respondents' adherence to dialysis treatment regimens based on religion in all categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level.

Thus, both groups are influenced by the same factors regarding their adherence to dialysis treatment regimens based on their sex since all the p-values for the different categories exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level. The overall analysis suggests that sex does not play a significant role in influencing the factors that affect dialysis adherence. Consequently, these results highlight the importance of focusing on individualized patient experiences and barriers rather than making gender-based assumptions. By addressing the specific needs and challenges faced by each patient, healthcare providers can enhance support and improve adherence to dialysis treatments.

Table 10
Independent Sample t-test on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens Based on their Sex

Category	Sex	N	M	SD	t	df	p-value	Decision	Interpretation
Health Issues	Male	71	3.51	0.48	-0.164	98	0.870	Accept	Not Significant
	Female	29	3.53	0.50					
Family Reasons	Male	71	3.25	0.63	-0.688	98	0.493	Accept	Not Significant
	Female	29	3.34	0.52					
Personal Reasons	Male	71	3.27	0.49	1.181	98	0.240	Accept	Not Significant
	Female	29	3.14	0.52					
Transportation Difficulties	Male	71	3.15	0.74	-0.604	98	0.547	Accept	Not Significant
	Female	29	3.24	0.65					
Other Medical Appointments	Male	71	3.13	0.62	-0.197	98	0.844	Accept	Not Significant
	Female	29	3.15	0.46					
Financial Constraints	Male	71	3.24	0.68	-0.158	98	0.875	Accept	Not Significant
	Female	29	3.26	0.56					
Overall	Male	71	3.26	0.49	-0.200	98	0.842	Accept	Not Significant
	Female	29	3.28	0.40					

Table 11
Independent Sample t-test on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens Based on their Civil Status

Category	Civil Status	N	M	SD	t	df	p-value	Decisi-on	Interpretation
Health Issues	Single	33	3.64	0.48	1.668	97	0.099	Accept	Not Significant
	Married	66	3.47	0.48					
Family Reasons	Single	33	3.46	0.51	2.109	97	0.138	Accept	Not Significant
	Married	66	3.19	0.63					
Personal Reasons	Single	33	3.35	0.43	1.642	97	0.104	Accept	Not Significant
	Married	66	3.18	0.52					
Transportation Difficulties	Single	33	3.27	0.73	0.894	97	0.373	Accept	Not Significant
	Married	66	3.13	0.71					
Other Medical Appointments	Single	33	3.21	0.64	0.914	97	0.363	Accept	Not Significant
	Married	66	3.10	0.54					
Financial Constraints	Single	33	3.36	0.66	1.165	97	0.247	Accept	Not Significant
	Married	66	3.20	0.64					
Overall	Single	33	3.38	0.44	1.748	97	0.084	Accept	Not Significant
	Married	66	3.21	0.46					

An Independent Sample T-test was conducted to compare the differences in the factors that influence the respondents' adherence to dialysis treatment regimens based on their civil status. The test result revealed no significant difference between single and married responses/assessments. Thus, both groups are influenced by the same factors regarding their adherence to dialysis treatment regimens based on their civil status since all the p-values for the different categories exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level.

These findings indicate that health issues, family support, personal motivations, transportation difficulties, scheduling conflicts, and financial constraints are consistent barriers to adherence regardless of marital or relationship status. These findings imply that adherence challenges are not primarily determined by civil status but are likely shaped by broader personal, social, and systemic factors. Addressing these barriers will require a more individualized approach that transcends civil status to ensure interventions effectively support patients' adherence to dialysis regimens.

The one-way ANOVA analysis assessed the impact of religion on factors influencing adherence to dialysis, which included health issues, family reasons, personal reasons, transportation difficulties, other medical appointments, and financial constraints. The findings indicated no statistically significant differences among the various religious groups for any of the factors considered. Specifically, health issues yielded a p-value of 0.874, family reasons 0.749, and personal reasons 0.944, all indicating a lack of significant variance related to religion. Additionally, transportation difficulties, other medical appointments, and financial constraints presented p-values of 0.810, 0.982, and 0.928, respectively, further confirming that religious affiliation does not significantly affect

the challenges related to adherence to dialysis.

Table 12
One-way ANOVA on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens when grouped according to Religion

Religion	N	M	SD	df	F	p-value	Decision	Interpretation
Overall								
Roman Catholic	51	3.26	0.44	4	0.218	0.928	Accept	Not Significant
Born Again	19	3.33	0.56					
Methodist	3	3.22	0.10					
Iglesia Ni Cristo	26	3.23	0.46					

Note*: Muslim respondent was excluded from the analysis due to its sample size.*

These findings suggest that barriers to adherence are consistent across religious affiliations, highlighting the universal nature of these challenges. As such, interventions aimed at improving adherence should focus on addressing these factors comprehensively, rather than tailoring strategies based on religious considerations. This insight underscores the need for inclusive and universally accessible support mechanisms to improve dialysis treatment adherence.

Table 13
One-way ANOVA on the Difference in the Factors that Influence the Respondents' Adherence to Dialysis Treatment Regimens when grouped according to Ethnicity

Ethnicity	N	M	SD	df	F	p-value	Decision	Interpretation
Overall								
Tagalog	10	3.31	0.53	5	0.050	0.998	Accept	Not Significant
Ilocano	70	3.26	0.45					
Cebuano	3	3.18	0.72					
Bicolano	5	3.27	0.72					
Kapampangan	3	3.32	0.40					
Ybanag	9	3.25	0.30					

A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on ethnicity. The results indicated no significant differences in the factors influencing respondents' adherence to dialysis treatment regimens based on ethnicity in all categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level. Overall, the results of the analysis showed that ethnicity did not play a significant role in influencing adherence to dialysis across these factors, as no statistically significant differences were found between the various ethnic groups. This suggests that regardless of ethnicity, patients may encounter comparable difficulties.

Table 14
Test on Significant Difference on the Factors that Influence Non-Adherence to Dialysis Treatment Regimens as to Educational Attainment

Educational Attainment	N	M	SD	df	F	p-value	Decision	Interpretation
Overall								
College Graduate	12	3.21	0.47	2	0.185	0.832	Accept	Not Significant
College Level	54	3.29	0.45					
High School Graduate	33	3.24	0.49					

Note: *Others/Vocational Course respondent was excluded from the analysis due to its sample size.*

A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on educational attainment. The results indicated no significant differences in the factors influencing respondents' adherence to dialysis treatment regimens based on educational attainment in all categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level. Overall, these findings imply that challenges related to adherence to dialysis remain largely consistent regardless of educational attainment. This lack of variance suggests that challenges such as health-related issues, family dynamics, personal barriers, transportation difficulties, conflicts with other medical appointments, and financial constraints

are experienced similarly across different educational levels.

Table 15
Test on Significant Difference on the Factors that Influence Non-Adherence to Dialysis Treatment Regimens as to Average Monthly Income

Average Monthly Family Income Overall	N	M	SD	df	F	p-value	Decision	Interpretation
Less than 10,000-20,000 pesos	75	3.29	0.48	2	0.731	0.484	Accept	Not Significant
20,001-30,000 pesos	19	3.15	0.40					
30,001-40,000 pesos	6	3.35	0.44					

A one-way analysis of variance (ANOVA) was conducted to determine if there were any statistical differences in the factors influencing respondents' adherence to dialysis treatment regimens based on average monthly family income. The results indicated no significant differences in the factors influencing respondents' adherence to dialysis treatment regimens based on average monthly family income in all categories, as their p-values exceeded the 0.05 significance level. Therefore, the null hypothesis was accepted at the 0.05 significance level. These findings suggest that average monthly income does not play a significant role in influencing adherence to dialysis, highlighting the importance of considering other individual circumstances that may more profoundly impact patients' adherence outcomes.

Proposed Measures or Intervention to Improve Patients' Adherence to Dialysis Treatment

In light of the findings from the research on adherence to dialysis treatment, it is essential to implement targeted interventions that address the various challenges faced by patients. The study revealed that while demographic factors such as sex, civil status, religion, and ethnicity did not significantly impact adherence, age-specific barriers and healthcare facility resources played a crucial role.

1. Develop individualized care plans that consider each patient's comorbidities, limitations, and dialysis tolerance to improve adherence.

2. Provide counseling and psychological services to address emotional distress, anxiety, or depression that may stem from chronic illness.

3. Conduct regular education sessions for family members to increase understanding and support for the patient's treatment journey.

4. Facilitate open dialogue among family members and healthcare providers to resolve issues that affect the patient's attendance to dialysis.

5. Offer dialysis session options that consider the patient's family obligations, particularly for those with care giving or work-related responsibilities.

6. Collaborate with government agencies and NGOs to provide support for treatment costs, including transportation and medications.

7. Assist patients in enrolling and maximizing benefits from national health programs such as Phil-health.

8. Engage local government units, private sectors, and civil society to support resource mobilization and service delivery.

9. Assign trained health navigators or social workers to help patients overcome logistical, financial, and health literacy barriers.

10. Implement systems to track patient attendance, reasons for missed treatments, and effectiveness of interventions.

4. Discussion

4.1 Demographic Profile of the Respondents

The profile of dialysis patients provides essential insights into factors influencing treatment adherence, especially in regions where chronic conditions like hypertension, diabetes, and kidney disease are prevalent. A study by Khan et al. (2021) emphasizes that age is a significant factor influencing adherence to medical treatments, especially for individuals suffering from chronic kidney disease (CKD). Middle-aged patients, particularly those aged 44-53 years, are more likely to develop CKD due to the cumulative effects of age-related health issues such as hypertension and diabetes, both of which are common in this demographic (Khan et al., 2021).

Gender differences in health-seeking behavior also play a role in treatment adherence, particularly in male-dominated patient populations. Several studies suggest that men are generally less likely to seek medical care or adhere to prescribed treatment regimens compared to women (Chong et al., 2022). This could be attributed to cultural norms that discourage men from expressing vulnerability or seeking help, especially in healthcare settings (Chong et al., 2022). In the case of dialysis patients, this gender disparity could affect adherence rates, highlighting the need for healthcare providers to consider gender-specific interventions. The civil status of patients, particularly being married, has been found to positively influence adherence to medical treatments, as it often provides emotional and logistical support that encourages consistency in attending dialysis sessions (Mohan et al., 2023). Spouses and family members may assist in the transportation and emotional well-being of dialysis patients, further strengthening the importance of social support systems in managing chronic diseases like CKD.

Finally, ethnic, religious, and educational factors significantly influence healthcare behaviors and treatment adherence. Ethnic backgrounds can shape attitudes towards health and medical treatment, with some groups more likely to rely on traditional practices or exhibit different levels of trust in modern healthcare systems (Garcia et al., 2020). For example, in communities with significant Roman Catholic populations, religious beliefs may influence perceptions of illness and treatment adherence (Garcia et al., 2020). Additionally, education is a critical determinant of health literacy, with higher educational attainment correlating with a better understanding of medical conditions and the importance of treatment adherence (Mohan et al., 2023). However, despite higher education levels, financial constraints remain a significant barrier to consistent dialysis treatment. The substantial proportion of patients earning less than 20,000 pesos a month reflects the economic challenges faced by many dialysis patients, making it difficult to afford transportation, medications, and other necessary resources (Chong et al.,2022). Addressing these financial barriers, alongside the demographic factors mentioned, will be crucial in improving treatment adherence and ultimately patient outcomes in dialysis care.

4.2 Factors that Influence the Patients' Non-Adherence to Dialysis Treatment Regimen

The findings of the study reveals several key factors that significantly influence adherence to dialysis treatment regimens. Health-related issues are the most impactful, with participants strongly agreeing that complications like infections, dialysis-related symptoms (fatigue, nausea), mental health issues, comorbid conditions (e.g., diabetes, hypertension), and chronic pain significantly disrupt adherence. The weighted mean average of 3.52 highlights the importance of addressing these health challenges to improve adherence. Naalweh et al. (2017) found that patients missed dialysis due to health issues (32.6%).

Family-related factors also play a critical role, with a lack of social support, inadequate understanding of treatment, family conflicts, and poor knowledge of dietary restrictions being major barriers. It is clear that family support is essential for consistent treatment adherence. The findings of the study underscore the significant influence of various factors on dialysis treatment adherence, with health-related issues being the most impactful. The strong agreement among participants regarding the disruptive effects of complications such as infections,

dialysis-related symptoms (fatigue, nausea), mental health issues, comorbid conditions, and chronic pain highlights the need for targeted interventions to manage these health challenges. As supported by Alhamad et al. (2023), adequate family and social support were associated with better adherence.

Personal factors such as forgetfulness, lack of self-discipline, negative past experiences, and feelings of hopelessness contribute to non-adherence, emphasizing the importance of motivation and emotional well-being in treatment adherence. Naalweh et al. (2017) found that patients missed dialysis due to family or personal reasons. Transportation difficulties are another significant barrier, as limited access to reliable transportation, high transportation costs, and reliance on unreliable services create challenges in attending dialysis sessions. The weighted mean of 3.17 suggests that improving transportation access is crucial. Conflicts with other medical appointments also hinder adherence, with scheduling conflicts, long wait times, fatigue, and conflicting advice contributing to missed sessions. The findings also underscore the need for better coordination of medical appointments to prioritize dialysis treatments. This is supported by Alzahrani et al. (2021) who found that factor such as transportation is associated with adherence to hemodialysis sessions. The findings also support the claim of Naalweh et al. (2017) that one of the reasons for non-adherence is due to transportation difficulties.

Lastly, financial constraints, including high treatment and medication costs, lack of insurance, and financial instability, pose significant barriers to adherence highlighting the importance of financial support and improved insurance coverage to ensure consistent treatment. Overall, these factors, health challenges, family support, personal motivation, transportation, scheduling conflicts, and financial constraints, are critical to understanding and improving dialysis adherence. Addressing these barriers can enhance patient outcomes and treatment compliance. The findings suggest that financial constraints are a significant barrier to dialysis adherence, with issues such as high treatment and medication costs, lack of insurance, and financial instability contributing to non-adherence. This underscores the need for financial support systems, such as subsidies or assistance programs, and improved insurance coverage to alleviate these burdens. Ensuring that patients have access to affordable treatment options is critical for improving adherence and overall health outcomes. This supports Naalweh et al. (2017) who claimed that patients missed dialysis due to financial constraints.

Additionally, the study highlights the complex interplay of various factors—health-related challenges, family support, personal motivation, transportation difficulties, scheduling conflicts, and financial constraints that influence dialysis adherence. Addressing these barriers through a comprehensive approach, including better healthcare coordination, emotional and psychological support, and practical solutions to transportation and financial challenges, can significantly enhance patient compliance with dialysis treatment. By targeting these key areas, healthcare providers and policymakers can work to improve treatment outcomes, reduce the burden on patients, and ultimately improve the quality of life for individuals undergoing dialysis.

4.3 Test on Significant Difference on the Factors that Influence Patients' Non-Adherence to Dialysis Treatment Regimen when grouped according to Profile Variables.

The research aimed to investigate the factors influencing adherence to dialysis treatment, highlighting the variability of these factors based on participants' demographic characteristics such as sex, civil status, religion, ethnicity, educational attainment, average monthly income. By utilizing independent samples t-tests, the study assessed the impact of sex on adherence-related factors. The findings revealed no significant differences between male and female participants, indicating that both genders face similar challenges in adhering to their treatment regimens. This suggests that the barriers to adherence are not inherently tied to gender, prompting a deeper exploration into other personal and contextual factors that might influence patient behavior.

Moreover, the research delved into the impact of healthcare facilities on adherence, revealing significant disparities in transportation difficulties and financial constraints between participants at different institutions. Those receiving treatment at one specific facility reported greater challenges, indicating that the resources and support available at different healthcare settings can profoundly influence adherence outcomes. These insights

emphasize the importance of developing comprehensive support systems within healthcare facilities, such as transportation services or financial assistance programs, to alleviate barriers to treatment. Ultimately, the study advocates for an individualized approach to enhance dialysis adherence, encouraging healthcare providers to focus on unique patient experiences and challenges rather than relying on demographic assumptions, thereby fostering improved health outcomes for patients undergoing dialysis.

This is in contrast with the findings of Alhamad et al. (2023) who found that factors such as gender, education level, and transportation means significantly influenced adherence. Also, Stamatakis et al. (2017) found that age, marital status, region, employment status, and distance to the dialysis center did not significantly affect adherence. These findings suggest gender, education, and transportation methods play significant roles in adherence to hemodialysis treatment.

5. Conclusion and recommendations

The findings of this study shed light on the following conclusions: The results reveal that the majority of dialysis patients are between the ages of 44 and 53, predominantly male, married, and identify as Roman Catholic. Additionally, most patients have attained a college education and earn less than 20,000 pesos per month. These demographic characteristics highlight important factors that may influence their experiences with dialysis treatment, including age-specific health concerns, family dynamics, educational background, and financial constraints. The respondents highly recognize that health issues, financial constraints, and family-related barriers emerged as the most significant contributors to their non-adherence to dialysis treatment regimen. They also recognized additional factors, including personal reasons, transportation difficulties, and scheduling conflicts with other medical appointments, all of which disrupt adherence. The findings of the study revealed significant differences when examining adherence factors by age, particularly in relation to personal reasons, other medical appointments, and financial constraints. On the other hand, the findings demonstrated no statistically significant differences in adherence factors based on sex, civil status, religion, ethnicity, educational attainment, or average monthly family income, suggesting that these demographic variables do not directly influence patients' non-adherence to dialysis treatment regimens.

Drawing from the conclusions of the study's findings, the researcher presents several actionable recommendations aimed at addressing the identified challenges: Adopt a holistic approach that not only focuses on the medical management of dialysis patients, but also incorporates family engagement and education, as well as strategies to manage health-related challenges, to optimize treatment adherence. Incorporate motivational strategies, psychological support, and counseling into treatment plans to help patients overcome these personal challenges. Include organizing transportation services or partnering with local transportation providers to offer subsidized or reliable travel options. Improve scheduling systems to reduce waiting times and ensure that dialysis appointments take priority, thereby minimizing conflicts and enhancing adherence to the treatment regimen. Establish family-focused counseling and support initiatives to help families better understand the importance of treatment adherence and how they can actively contribute to the patients' care and emotional well-being. Implement personalized counseling or peer support groups to address personal challenges such as feelings of hopelessness, forgetfulness, and lack of motivation, fostering a positive mindset among patients. Introduce telehealth options for follow-up consultations and non-emergency appointments, reducing the need for patients to travel and making it easier to manage other medical commitments.

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