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ORIGINAL ARTICLE

Adherence to treatment in patients with chronic kidney disease undergoing hemodialysis

Adesão ao tratamento de pacientes com doença renal crônica em hemodiálise

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KEYWORDS
Chronic Renal Failure
Medication Adherence
Renal Dialysis
Treatment Adherence and Compliance

ABSTRACT

Objective: To identify the adherence to therapeutic regimens in patients with chronic kidney disease undergoing hemodialysis (HD). **Method**: This is a descriptive, cross-sectional study using a quantitative approach developed at an HD center in the south of Minas Gerais, Brazil. The study participants were 51 patients undergoing HD. Personal, socioeconomic, and objective data were collected, and the End-Stage Renal Disease Adherence Questionnaire (ESRD-AQ) was applied. The analysis was performed using simple descriptive statistics. **Result**: The average age was 56.7 years, and 58% of the patients were male. The percentages of non-adherence were diet (35.4%), hemodialysis (21.6%), fluid intake (15.7%), and medication (13.7%). **Conclusion**: Therapeutic adherence is a complex process that requires constant monitoring by a multidisciplinary team.

PALAVRAS-CHAVE
Insuficiência Renal Crônica
Adesão à Medicação
Diálise Renal
Cooperação e Adesão ao Tratamento

RESUMO

Objetivo: Identificar a adesão ao regime terapêutico de pacientes com doença renal crônica em hemodiálise. **Método:** Trata-se de um estudo descritivo, transversal, com abordagem quantitativa, desenvolvido em um centro de hemodiálise situado no sul de Minas Gerais. Os participantes do estudo foram 51 pacientes em tratamento hemodialítico. Foram coletados dados pessoais, socioeconômicos, objetivos e aplicado o "Questionário de avaliação sobre a adesão do portador de doença renal crônica em hemodiálise". A análise foi realizada por meio de estatística descritiva simples. **Resultado:** A média de idade foi de 56,7 anos e 58% dos pacientes foram do sexo masculino. Os percentuais de não aderência encontrados foram dieta (35,4%), hemodiálise (21,6%), ingestão de líquidos (15,7%) e medicação (13,7%). **Conclusão:** A adesão terapêutica é um processo complexo, e por isso necessita de acompanhamento constante pela equipe multiprofissional.

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INTRODUCTION

Chronic kidney disease (CKD) is characterized by slow, progressive, and irreversible loss of kidney function[1]. There are several etiologies for the development of CKD, mainly systemic arterial hypertension (SAH) and diabetes mellitus (DM)[2], followed by obesity, glomerulopathies, acute kidney failure, and lupus[1].

CKD usually begins asymptomatically, and complications occur when the patient reaches the advanced stage[3]. Early diagnosis of CKD allows conservative treatment through dietary restrictions and the use of medications to control the underlying disease. However, as the disease progresses, it is necessary to implement renal replacement therapy (RRT), such as kidney transplantation and dialysis processes, which include peritoneal dialysis and hemodialysis (HD)[2]. HD is the most used type of RRT in Brazil and worldwide[4,5].

Although HD provides survival for people with terminal CKD, users who undergo this treatment report several difficulties, such as coping with the symptoms of the disease, lifestyle changes arising from traveling to the dialysis service, food and water restrictions, impairment of work, and physical and leisure activities[5].

The disease subjects the individual to a complex therapeutic regimen of RRT, dietary and fluid restriction, and medication administration. These four elements are inseparable and comprise the pillars of therapy, which impact morbidity and mortality[6]. For good adherence to the therapeutic regimen, the efficient performance of the healthcare team is essential, as they have the mission of providing guidance, answering questions, and clearly transmitting the recommended prescriptions[7].

Given the above, the importance of identifying adherence to the therapeutic regimen of HD patients is recognized because of the complexity of the treatment, the impact on quality of life, and the need for efficient monitoring by a multidisciplinary team. Therefore, this study aimed to identify the adherence of patients with chronic kidney disease to the HD therapeutic regimen.

METHODS

Study design, period, and location

This descriptive, cross-sectional study with a quantitative approach was conducted in 2022 in an HD center at the Hospital de Clínicas de Itajubá, located in the south of Minas Gerais, Brazil. The HD service had 104 patients from the municipality of Itajubá and cities in the micro- and macro-regions at the time of the study. The service was authorized by the Ministry of Health in 2013 and benefits patients referred by the Unified Health Service (SUS)[8].

Sample, inclusion, and exclusion criteria

The study participants were undergoing HD in the RRT service of the abovementioned hospital. The inclusion criteria were being on HD for more than 3 months 3 times a week, being over 18 years old, being independent in basic activities of daily living, knowing how to read, and having preserved cognitive capacity. Patients with impaired visual, hearing, or verbal communication capabilities, which made it impossible to apply the data collection instrument, were excluded.

Sampling was non-probabilistic for convenience. Eighty-four participants were personally approached, whereas the rest were not because of their absence on the days of data collection, with 33 failing to meet the inclusion criteria or refusing to participate in the research. The sample consisted of 51 participants.

Data collect

Three instruments were used for data collection: the Personal and Socioeconomic Characterization Instrument, the Objective Data Collection Instrument, and the End-Stage Renal Disease Adherence Questionnaire (ESRD-AQ).

The ESRD-AQ has been a validated and culturally adapted instrument in Brazil since 2017[9]. It comprises 46 questions divided into five sessions: general information about the patient and RRT, hemodialysis, medication, water restrictions, and dietary recommendations. The questions included in the instrument used a combination of the Likert scale, multiple choice, and yes/no answers[10].

The most compliant patients achieve more points. The total score in the HD domain varies from 0 to 600 points. Adherence scores to medication, water intake, and diet vary from 0 to 200 points[10].

Subjective data from the questionnaire were correlated with objective criteria for determining adherent/non-adherent behavior. These criteria are as follows: missing more than one session or shortening more than 10 min of HD session (non-adherence to HD); having serum phosphorus levels greater than 7.5 mg/ dL (non-adherence to medication and diet); interdialytic weight gain (IDWG) greater than 5.7% of dry weight (non-adherence to water intake) and serum potassium levels greater than 6 mmol/L (non-adherence to the diet)[10].

Data collection occurred in May and June 2022. Those who agreed to participate in the research signed the Free and Informed Consent Form. The objective criteria were collected from the patients' electronic medical and exam records.

Statistics

The collected data were tabulated in a Microsoft Excel spreadsheet and analyzed using simple descriptive statistics.

Ethical aspects

The study followed Resolution No. 466 of 2012 of the National Health Council, which refers to the standards for research with human beings[11] and the Brazilian General Personal Data Protection Law (LGPD), law No. 13,709 of August 14, 2018[12]. The research was submitted to the Research Ethics Committee of the Faculty of Medicine of Itajubá and was approved in April 2022 (CAAE 53154121.5.0000.5559).

RESULTS

Fifty-one patients answered the questionnaire. The average age was 56.7 years ± 12.2 years, between

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20 and 82 years. It was identified that 30 patients (58.8%) were male, 29 (56.9%) were married, 30 (58.8%) had incomplete primary education, and 22 (43.1%) were retired. Sociodemographic characteristics are shown in Table 1.

The most used type of transport to go to HD was that provided by the city hall (80.4%), followed by the patient's own transportation (15.6%). 68.6% of patients said they went to the dialysis center unaccompanied.

The minimum HD treatment duration was 3 months and the maximum was 120 months. Regarding the frequency of treatment time, 35 (68.6%) participants had been on HD for 12 months or more. No participant had ever undergone peritoneal dialysis, and only 4 (7.8%) had undergone kidney transplantation. The most common duration of a session was 4 h (60.8%), followed by 3 h (33.3%) and 3 h 30 min (5.9%).

Participants were questioned about the health professional's role in educating and encouraging patients to adhere (Table 2).

Questions were asked regarding their perception of the treatment. The most prevalent answers about correctly completing the treatment were those that talked about the functioning of the kidneys and the desire to keep the body healthy.

When asked about how important it is to comply with treatment in all areas, the most common answer was "very

Table 1 – Distribution of participants regarding sociodemographic variables (N = 51).

Description	Characteristics	n (%)
Age (years-old)	20 to 31	2 (3.9)
	32 to 41	3 (5.9)
	42 to 51	12 (23.5)
	52 to 61	15 (29.4)
	62 or older	19 (37.3)
Genre	Feminine	21 (41.2)
	Masculine	30 (58.8)
Marital status	Married	29 (56.9)
	Divorced	1 (2.0)
	Single	13 (25.5)
	Stable union	4 (7.8)
	Widower	4 (7.8)
Education	Incomplete fundamental	30 (58.8)
	Complete fundamental	3 (5.9)
	Full medium	13 (25.5)
	Graduated	5 (9.8)
Color/race	White	32 (62.7)
	brown	10 (19.6)
	Black	9 (17.7)
Occupation	Retired	22 (43.1)
	Sickness benefit	11 (21.5)
	From home	14 (27.4)
	factory worker	2 (4.0)
	Driver	1 (2.0)
	Pedagogue	1 (2.0)
Family income (minimum wages)	Less than 1	4 (7.8)
	1	24 (47.1)
	2 to 3	17 (33.4)
	4 to 5	2 (3.9)
	More than 5	4 (7.8)

Table 2 – Participants' responses regarding professional participation in encouraging adherence (N = 51).

Questions	n (%)
When was the last time a healthcare professional spoke to you about the importance of not missing hemodialysis	
This week	6 (11.8)
Last week	9 (17.6)
A month ago	2 (3.9)
More than a month ago	8 (15.7)
When I first started treatment	21 (41.2)
Never	5 (9.8)
When was the last time a healthcare professional spoke to you about your medications	
This week	8 (15.7)
Last week	6 (11.8)
A month ago	17 (33.3)
More than a month ago	15 (29.4)
When I first started treatment	5 (9.8)
When was the last time a healthcare professional spoke to you about how much fluid you could drink	
This week	4 (7.9)
Last week	8 (15.7)
A month ago	2 (3.9)
More than a month ago	15 (29.4)
When I first started treatment	20 (39.2)
Never	2 (3.9)
When was the last time a healthcare professional talked to you about your diet	
This week	3 (5.8)
Last week	6 (11.8)
A month ago	7 (13.7)
More than a month ago	23 (45.1)
When I first started treatment	6 (11.8)
Never	6 (11.8)

important" in HD (68.6%), medications (72.6%), intake of liquids (66.6%), and diet (66.7%).

However, some participants considered compliance with the HD schedule as moderately important (3.9%), not very important (2.0%), and not important (2.0%). Restricting the amount of liquids was also scored as moderately important (3.9%), not very important (2.0%), and not important (2.0%). In the diet domain, the answers "moderately important" (9.8%) and "not important" (3.9%) were also obtained.

Regarding the habit of weighing themselves outside the clinic, 86.2% responded that they had never weighed themselves. Regarding daily weighing, 45.1% of participants responded that it was very important, but 29.4% said the opposite.

The questionnaire also asks whether the patient has difficulties following the proposed treatment and at what level this occurs (Table 3). Data regarding adherence issues are shown in Table 4.

The reasons given by participants for missing the HD session were going to the Social Security facility (INSS) (2.0%), having medical care (2.0%), not wanting or not being able to go (7.8%), and attending a friend's graduation ceremony (2.0%). Regarding the reason "I did not want to go or could not go", patients explained cramps during HD (2.0%), physical discomfort (3.9%), and depression (2.0%). The reasons for reducing the session time were medical appointments, transportation problems, and leg pain.

Regarding the difficulty in maintaining the dietary recommendation, the main answer was not being able to avoid certain foods that were not recommended (33.3%). The results regarding the patients' adherence status are shown in Table 5.

Table 3 – Responses regarding the difficulties presented by the participants (N = 51).

Questions	n (%)
How much difficulty have you had remaining during the entire hemodialysis session?	
No difficulties	40 (78.4)
A little difficulty	9 (17.6)
Moderate difficulty	1 (2.0)
Much difficulty	1 (2.0)
How much difficulty do you have taking prescribed medications?	
No difficulties	45 (88.2)
A little difficulty	3 (5.9)
Very difficult	3 (5.9)
How much difficulty do you have in complying with the fluid restriction?	
No difficulties	39 (76.5)
Little difficulty	6 (11.7)
Medium difficulty	1 (2.0)
Much difficulty	4 (7.8)
Extreme difficulty	1 (2.0)
How much difficulty do you have following dietary recommendations?	
No difficulties	32 (62.7)
Little difficulty	7 (13.7)
Medium difficulty	6 (11.8)
Much difficulty	6 (11.8)

Table 4 – Participants' responses regarding treatment adherence questions (N = 51).

Questions	n (%)
During the past month, how many dialysis sessions did you miss?	
None	44 (86.3)
1	6 (11.7)
2	1 (2.0)
Last month, how many times did you ask to reduce the time on hemodialysis	
0	48 (94.1)
1	2 (3.9)
2	1 (2.0)
Last month, when hemodialysis time was reduced, this reduction was how many minutes	
I did not reduce the time of any hemodialysis session	48 (94.1)
11 to 20 min	1 (2.0)
21 to 30 min	2 (3.9)
During the past week, how often did you miss any of your medications?	
Not once	49 (96.0)
Very rarely	1 (2.0)
About half the time	1 (2.0)
During the past week, how often did you follow the recommended fluid restriction for you?	
Ever	35 (68.6)
Most of the time	8 (15.7)
In half the time	1 (2.0)
Rarely	4 (7.8)
Never	3 (5.9)
During the past week, how often did you follow the recommended diet	
Ever	26 (51.0)
Most of the time	11 (21.6)
In half the time	7 (13.7)
Rarely	4 (7.8)
Never	3 (5.9)

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Table 5 – Participants' responses regarding treatment adherence status (N = 51).

Domain	Status	n (%)	Average
Hemodialysis	Adherent	40 (78.4)	585.0
	Non-adherent	11 (21.6)	545.4
Medication	Adherent	44 (86.3)	200.0
	Non-adherent	7 (13.7)	178.5
Liquids	Adherent	43 (84.3)	170.9
	Non-adherent	8 (15.7)	143.7
Diet	Adherent	33 (64.7)	159.1
	Non-adherent	18 (35.3)	138.9

DISCUSSION

The majority of men in the sample corroborates the last Brazilian Dialysis Census, which revealed a higher percentage (58%) of males on HD[13]. These findings are similar to those of studies conducted in the municipalities of São Luís[14], Juazeiro[15], the state of Bahia[16], and southern Santa Catarina[17]. The main reason for the higher prevalence of HD in the male population is that they are more prone to chronic non-communicable diseases such as SAH and DM, which are the main risk factors for CKD[16]. There is also less demand from men for health services. This condition contributes to the late diagnosis of CKD and consequent need for RRT[15].

Regarding the average age, a study conducted in a municipality in Bahia identified similar results (54.9 years)[16]. It is worth mentioning that there is a 10% reduction in the renal cortex every 10 years after age 40. The aging process is associated with changes in the renal system and an increased rate of nephrosclerosis, tubular atrophy, interstitial fibrosis, and atherosclerotic changes[18]. It was also observed that 54.9% of the sample was between 20 and 59 years old. The high incidence of terminal CKD in people of economically active age has a significant economic impact because of the high cost of treatment offered by the SUS, as well as the increase in the number of disability retirements[15].

The predominance of white people has also been verified in other studies[17]. In the municipality where the study was conducted, white race was the most common, with 77% of the population[19]. The higher prevalence of married users may be related to the higher prevalence of adults and the elderly.

It was observed that most of the sample had incomplete primary education. A similar result was found in a municipality in Bahia, where it was found that 78.4% of patients had low education15. The socioeconomic situation affects the patient's knowledge about CKD, and the lower the level of education, the greater the difficulty in accessing health services, consequently generating the acceleration and progression of the disease[17].

Most interviewees had a family income of 1 minimum wage. CKD has significant economic impacts on the health system and the user.16. The individual may experience a decreased ability to perform work, making it necessary to seek government assistance. This financial resource is often less than the income before the illness[20].

Regarding travel to the HD clinic, most patients used transportation provided by the city hall, which reflects patients' high dependence on transportation provided by their cities of origin, which is often characterized by long distances and exhaustion. These factors negatively impact patients' quality of life[21].

Most patients said they go to the dialysis center unaccompanied. It is worth noting that being independent in basic activities of daily living was an eligibility criterion for this study. The literature reports that the need for companionship is related to a higher prevalence of symptoms, worsening of the effects and burden of CKD, and reduced autonomy imposed by the limitations caused by the disease[22].

HD treatment time ranged from 3 to 120 months. It is worth mentioning that patients' quality of life is more affected as they become older and the longer they have been dependent on HD. Over time, functional capacity, leisure activities, social interaction, and work relationships decrease. Such changes impact fragility, loss of autonomy, psychological problems, and lack of financial and family support[23].

Regarding RRT modalities, none of the interviewees had undergone peritoneal dialysis. In Brazil, data from 2020 reveal that HD is the most used RRT method (92.6%), with only 7.4% of patients treated with peritoneal dialysis[13]. Studies have identified that the use of double lumen catheters is associated with a reduced survival rate, as there is a greater risk of bacteremia, septicemia, and hospitalization[24].

Only 4 patients underwent kidney transplantation. Returning to hemodialysis therapy after kidney transplantation can trigger feelings of fear about the future, insecurity, anger, and non-acceptance of the disease and its treatment[25].

Questions were asked regarding the health professional's role in educating and encouraging patients to adhere. A study conducted in two dialysis centers in the state of Rio de Janeiro found similar results, with the most frequent answer being "When I started treatment for the first time" in the HD and fluid intake domains. Regarding medications and diet, the most common answer was "A month ago"[10].

Treatment adherence, among other factors, depends on the effective performance of the professional who, in front of the patient, is responsible for guiding and resolving any doubts that may arise and explaining clearly and objectively the recommended prescriptions, helping them cope. Health professionals play a fundamental role in promoting treatment adherence[7].

The same survey in Rio de Janeiro found that the areas in which patients reported the most difficulty were water intake (49.8%) and diet (53.9%)[10]. A similar result was found in this study; however, the number of participants reporting difficulties was less significant.

Concerning the questions that sought to identify adherence, in the HD domain, a dissonance in the patients' responses was found when compared with the data in the medical records. Forty-four (86.3%) patients stated they had not missed the sessions; however, when verified in

the medical records, only 28 (54.9%) patients were absent in the reference month.Some hypotheses were raised to justify the decrease in HD attendance. The patient's understanding that he/she has some control over the therapy can encourage absences and reduced sessions. Other justifications that may motivate absences include rigid schedules, length of stay during the session, and the existence of post-HD symptoms[26].

In the medication domain, 49 (96.0%) patients indicated that they had not stopped taking any medication. The complexity of the treatment regimen, including polypharmacy, can hinder adherence for reasons that may be related to side effects, forgetfulness, low education, psychological problems, or lack of desire to adhere[15].

Excessive IDWG constitutes non-compliance with water and nutritional recommendations and generates the risk of hypervolemia with potential complications[26]. People who do not comply with water restrictions present with more symptoms. Water overload is associated with increased mortality, blood pressure, cardiac events, and worse HD results[21].

It was found that only 51% of the patients declared that they always followed the dietary recommendation. Dietary limitations and recommendations constitute the most challenging component of treatment because they can change the lifestyle and be unfavorable to the patient's preferences, eating habits, and cultural aspects[25].

The domain that presented the highest percentage of non-adherent patients was diet and HD, and the domain that presented the highest percentage of adherent patients was medication. Similar results were found in another study[10], in which a higher rate of non-adherent patients in the hemodialysis domain (32%) was found. The domain with the highest percentage of adherents was medication (93.6%).

A study conducted in South Korea identified the highest adherence score for HD, followed by medication and diet. The score for fluid restriction was the lowest[27]. Managing dietary restrictions has been identified as one of the most challenging behaviors, followed by fluid control[28].

This study has some limitations. There was a minor difference in the average score between adherent and non-adherent patients. This finding can be justified because of the nature of the questionnaire, in which participants may omit or forget information about their treatment. Although the inclusion criteria were designed so that the questionnaire could be self-administered, a limiting factor was that some patients had difficulty completing the questionnaire. Therefore, the researcher needed to read it.

CONCLUSION

This study highlighted the highest percentage of non-adherence to HD, diet, and fluid intake. The importance of a specialized care team in cultivating adherence to HD therapy is highlighted. Therefore, this study could promote reflection among professionals on the relevance of teaching focused on self-care.

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