

Assessing the relationship between health literacy and quality of life in chronic kidney disease patients

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ABSTRACT

Background and Objective: Over the last decade, there has been an increase in people undergoing haemodialysis for chronic kidney disease. This increase has led to many questions about the health literacy and quality of life of these patients. The main objective of this study is to assess the association between health literacy level and quality of life of chronic kidney patients undergoing regular haemodialysis.

Materials and Methods: It is a cross-sectional study that took place from March 1, 2022, to April 30 of the same year. We assessed health literacy using the HHL-EU-PT assessment instrument and quality of life using the KDQOL-SF. The sample consisted of 268 patients aged between 25 and 90 years from 7 haemodialysis clinics in Portugal. Data analysis was conducted using SPSS version 26.0. The Kolmogorov-Smirnov test was used to evaluate the normality of variable distributions, and the T-test was used to compare the dimensions of the Health Literacy scale and KDQOL-SF with dichotomous categorical variables.

Results: The application of the KDQOL-SF, we found that the dimensions with the best scores were encouragement from dialysis staff (82.46) and social support (77.49). Overall, we found an association between the medium score of literacy and patients' quality of life: for each additional point in health literacy, the quality-of-life score increased by 0.78 points ($p < 0.001$).

Conclusions: Therefore, improving the level of health literacy may be a possible strategy for improving quality of life for CKD patients.

Paper Type: Research Article

Keywords: Health Literacy, hemodialysis, quality of life

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Introduction

Chronic disease is currently regarded as one of the biggest challenges faced by medicine and health sciences. It is considered a major contributor to the gap between the mortality and morbidity curve, which represents the difference between life expectancy and quality of life (QL). Santos et al. emphasize the importance of assessing the rates of comorbidities and mortality, as well as evaluating the QL of patients undergoing hemodialysis in order to improve their chances of rehabilitation (1).

The theme of QL and health literacy (HL) is extremely important and has an impact on the daily lives of chronic renal patients undergoing hemodialysis. This gives rise to the need to evaluate the quality of life of these patients and their level of health literacy.

The main objective of this study is to assess the association between health literacy level and quality of life of chronic kidney patients undergoing regular haemodialysis.

Chronic Kidney Disease (CKD) is a condition characterized by a progressive and irreversible decline in renal function, resulting from structural and functional changes in the kidneys. It is a prolonged, asymptomatic disease in the early stages, which has been considered a public health issue due to its increasing incidence and prevalence in recent years. Hemodialysis (HD) is a necessary therapy to maintain the lives of individuals with chronic kidney disease but affects their QL due to the time spent during treatment (2).

HL is a relatively new concept that has gained significant attention in the field of public health. It represents a vibrant area of research in which researchers have highlighted its importance. According to the World Health Organization (2021) "Health literacy represents the personal knowledge and competencies that accumulate

through daily activities, social interactions and across generations. Personal knowledge and competencies are mediated by the organizational structures and availability of resources that enable people to access, understand, appraise and use information and services in ways that promote and maintain good health and well-being for themselves and those around them." (5).

Research suggests that HL can play a critical role in maintaining or improving health conditions and can be a fundamental element in health inequalities. In this context, HL is conceptualized as a resource, an empowering tool, for individuals to perform all functions in a healthy manner in the various contexts of daily life in society (2).

The Health Literacy in Europe (HHL-EU) project was the first to provide population data on health literacy at the European Union level, which included nine countries and allowed for a comparison of HL levels between the selected Member States (3). The project revealed that at least one in every ten participants (12.4%) had inadequate HL. In the validation process of the HHL-EU instrument for the Portuguese population (HHL-EU-PT), it was found that 61% of the population surveyed had a problematic or inadequate level of general health literacy, with the average of the nine countries where the project started at 49.2%. In terms of healthcare, only 44% had a sufficient or excellent level of HL. With regard to disease prevention, around 45% of those surveyed showed a sufficient or excellent level of health literacy, compared to the average of the 9 countries, which in this dimension had the value of 54.5%. In the health promotion dimension, 60% of the population surveyed had a problematic or inadequate level of health literacy, with the average being 52.1% (4).

However, there is debate among authors about whether QL is a subjective concept that varies from person to person, in historical time and in

different cultures, living conditions, beliefs, among others (6), or if it is a more objective measure that is related to physical health, mental state, independence, social relationships, beliefs and environment particularities (7).

Despite the difficulties in defining QL, it is a socially used expression that represents a positive feeling, related to self-esteem and personal well-being, and encompasses various aspects such as functional capacity, socioeconomic level, emotional state, social interaction, intellectual activity, self-care, family support, one's own state of health, cultural, ethical and religious values, lifestyle, job satisfaction and/or daily activities, and the environment in which one lives (8).

Dialysis treatment can have a negative impact on QL, especially in terms of social/family relationships and physical and psychological effects. Therefore, it is important to assess the QL of patients on dialysis treatment, as this can increase their possibilities of rehabilitation and improve their overall well-being. To assess QL in people with chronic kidney disease on dialysis, the KDQOL-SF (Kidney Disease Quality of Life Instrument) was constructed in 1995 and is an internationally used scale. The Portuguese version of KDQOL-SF was validated by Ferreira and Anes and can be used in scientific research for the Portuguese population (9).

Studies have highlighted the QL of people with end-stage renal disease (ESRD) as a major concern, as the chronic disease can be an obstacle to progress, quality, and life expectations. The context in which these people live, mainly the treatment and the time spent in each hemodialysis session, can lead to a reduction in the quality of psychological, physical, emotional, nutritional, social, and mental aspects, and contradict the patient's satisfaction with what is considered a good QL, mainly among the younger ones (10). In a study by Zahid et al. on the QL of chronic

renal patients, using the SF-36, it was found that approximately 55% of chronic (11).

The level of health literacy (HL) is crucial for patients with end-stage renal failure who undergo regular hemodialysis treatments to maintain their electrolyte and hydric balance, as well as to adhere to restrictions related to liquid, sodium, phosphorus, and potassium intake and to take various drugs to treat or prevent complications associated with the disease. Studies have suggested that limited HL is prevalent among chronically hemodialyzed patients and may lead to adverse outcomes, including mortality (12).

In the literature, we only found a single study that established a correlation between health literacy and quality of life in chronic kidney patients (13). Patients with lower literacy levels had worse QL, particularly in the physical component, although there was no association between HL level and the psychological component (13).

However, there is limited evidence to establish a causal relationship between HL and outcomes in chronic kidney disease (DRC). Alemayehu et al. propose associations between adverse clinical events, increased utilization of health services, and mortality. (14). Mazarova et al. report that patients with low health literacy levels are more inclined to decline the option of arteriovenous fistula construction and instead choose central venous catheter treatment, which is indicative of a poor quality of life. (15).

Some authors describe how patients with chronic diseases adopt different approaches to healthcare information. Limiting or avoiding health information may be a strategy used by some individuals to cope with the disease and does not necessarily mean that health information is inaccessible or difficult to comprehend. Comorbidity and a fragmented healthcare system can make it hard to navigate the healthcare system. A trusting relationship with healthcare

professionals appears to promote various aspects of health literacy and should be encouraged to optimize the health literacy of patients with chronic diseases (16).

Some authors argue that HL is not uniformly associated with participation in different self-care behaviors critical to managing chronic diseases. While HL is a strong predictor for long-term health, it is essential to consider the underlying factors that mediate the relationship between literacy and participation in self-care activities (17)

However, evidence suggests that HL interventions can reduce hospital visits, hospitalizations, and disease severity in other chronic conditions. In chronic diseases, HL is associated with a lower risk of death (18)

In conclusion, HL is associated with better mental health and QL. Identifying HL characteristics can help to direct specific interventions to improve patient education and support (19).

Materials and Methods

This is a quantitative, analytical-cross-sectional study. We used the HHL-EU-PT (4) assessment instrument to assess health literacy and the KDQOL-SF (9) to assess quality of life in chronic renal patients. The study population consists of people with chronic renal disease on hemodialysis, treated in clinics in Portugal.

The following inclusion criteria were considered: patients over 18 years of age; diagnosis of chronic kidney disease (stage V); voluntarily access to join the study; have the ability to give written informed consent to participate in the study; have intact cognitive functions assessed as such by the participating health professional; able to read and write in Portuguese.

The sample consisted of 268 individuals out of a total of 12,458, resulting in a margin of

error of 5.92%. The necessary authorizations for the development of the study were requested to the company's ethics committee, which gave a favourable opinion after analysing the study design and applying some suggestions issued by the committee. The application of the questionnaires took place between March 1st and April 30th, 2022.

The questionnaire and informed consent were given to patients who agreed to participate in the present study, and the obtained data were treated in an aggregated manner to ensure the anonymity of the participants.

The instrument used for assessment of Health Literacy was the European Health Literacy Survey Questionnaire (HHL-EU) and the KDQOL-SF 1.3 (Kidney Disease Quality of Life Instrument) for assessment of quality of life.

The original HLS-EU instrument consists of 47 questions grouped into three highly important health domains - healthcare (16 questions), health promotion (16 questions), and disease prevention (15 questions). The 47 questions use a 4-point scale, where individuals self-assess their perceived difficulty in performing relevant health-related tasks. The Likert scale used includes the following options: 1-Very Easy, 2-Easy, 3-Difficult, and 4-Very Difficult, with a fifth option corresponding to «Don't Know/ No Response.» This instrument was validated for the Portuguese population by Pedro et al. (2016), where it demonstrated good internal consistency assessed by Cronbach's alpha with a scale of 0.96 for the 47 items.

The Kidney Disease Quality of Life Instrument (KDQOL-SF) is a specific instrument for assessing the quality of life in patients with renal failure on dialysis, proposed by Hays et al. (1997). It consists of 43 disease-specific questions (KDQOL) grouped into eleven dimensions, and another part of the instrument includes 36 questions

grouped into 9 dimensions (SF-36), which were validated by Ferreira (2000).

We attempted to minimize sample bias through proper study design, selecting a representative sample from the population, and utilizing self-administered questionnaires, which helped limit information bias.

The KDQOL-SF scale includes some dimensions with only two items, which could lead to some instability in terms of internal consistency, as assessed by Cronbach's alpha, similar to what was observed in the validation for the Portuguese population. Nonetheless, in only five out of the nineteen dimensions for which internal consistency was calculated, Cronbach's alpha was lower than 0.70 (Kidney disease burden, $\alpha = 0.63$; Quality of social interaction, $\alpha = 0.38$; Sleep, $\alpha = 0.57$; Social functioning, $\alpha = 0.33$; and Employment status, $\alpha = 0.57$).

The evaluation of the psychometric properties of the Health Literacy Scale and the KDQOL-SF was performed by calculating the internal consistency, measured by Cronbach's alpha and by the item-total correlation. Adequate internal consistency was considered for $\alpha > 0.70$ (24) and item-total correlation for values above 0.30 (25).

Data Analysis

Data analysis was conducted using SPSS version 26.0. Absolute (n) and relative frequencies were used for categorical variables and medians (Mdn) and percentiles (P25-P75) for continuous variables age and after observation of the histograms, with a markedly asymmetrical distribution.

To evaluate the normality of variable distributions, the Kolmogorov-Smirnov test was used, and the T-test was used to compare the dimensions of the Health Literacy scale and KDQOL-SF with dichotomous categorical variables.

The non-adjusted and adjusted association for covariates was evaluated by linear regressions. The

unstandardized coefficients (β) were calculated by the maximum likelihood method and were intended to evaluate the size of the effect.

The confidence intervals at 95% for the size of the effect were also determined. Statistical significance was evaluated by the p-value, calculated by the WALD test. The significance level considered for rejection of the null hypothesis was 5%.

Results

This study included 268 patients with chronic kidney disease, aged between 25 and 90 years (Mdn=68.0, P25=59, P75=75) and the duration of hemodialysis treatment ranged from less than one year to 38 years, with a median of 3.0 years (P25=2.0, P75=7.0), as can be seen in the table 1

Table 1. Age and duration of Hemodialysis

	Mdn	P25-P75 (mín-máx)
Age (years)	68.0	59.0-75.0 (25 - 90)
Duration of Hemodialysis (years)	3.0	2.0-7.0 (<1 year - 38)

The patients were mostly from the central zone (n = 112, 41.8%), but with a significant prevalence in the Lisbon area (n = 81, 30.2%) and the north (n = 75, 28.0%), with a majority of males (n = 177, 66.0%). The majority of the sample had low literacy qualifications, with almost 50% of patients falling in the category of \leq 1st cycle completed (n = 130, 48.5%). This was followed by complete basic education, with 58 (21.7%) patients. Only 28 (10.4%) had completed higher education, and 51 (19.0%) had completed secondary education. A large portion of the patients were retired (n = 216, 80.6%), with only 31 (11.5%) being employed, 16 (6.0%) unemployed, and one being a student. These sample characteristics can be observed in the table 2.

Table 2. Sociodemographic Characterization

	n	%
Residence Area		
North	75	28.0%
Center	112	41.8%
Lisbon	81	30.2%
Gender		
Male	177	66.0%
Female	91	34.0%

Reliability Results of HHL-EU-PT and KDQOL-SF measurement Instruments

In Table 3, the psychometric properties of the Health Literacy Scale are presented. Internal consistency, evaluated by Cronbach's alpha, was higher than 0.90 (0.91-0.97) in all scales, fully meeting Nunnally's criterion ($\alpha > 0.70$). Item-total correlations were higher than 0.30 in all items. These results guarantee the reliability of the Health Literacy Scale in this sample.

Table 3. Psychometric properties of the Health Literacy Scale

Index	Cronbach's Alpha	Item-Total Correlation
Healthcare Literacy (i1 to i16)	0.91	0.51 – 0.71
Disease Prevention Literacy (i17 to i31)	0.92	0.50 – 0.74
Health Promotion Literacy (i32 to i47)	0.93	0.45 – 0.73
General Literacy (i1 to i47)	0.97	0.46 – 0.74

Item-total correlation presented in the form of range, where the minimum corresponds to the lowest value of item-total correlation found and the maximum corresponds to the highest value of item-total correlation found.

The KDQOL-SF scale is a scale with some dimensions with only two items, some instability was expected at the level of internal consistency, evaluated by Cronbach's alpha, which happened, a similar situation to what was detected at the time of validating the instrument for the Portuguese population. Nevertheless, in only five of the 19 dimensions, for which internal consistency was calculated, Cronbach's alpha was lower than 0.70 (Renal Disease Weight, $\alpha = 0.63$, Social Interaction Quality, $\alpha = 0.38$, Sleep, $\alpha = 0.57$, Social Function, $\alpha = 0.33$ and Occupational Activity, $\alpha = 0.57$). In the remaining ones, Cronbach's alpha was higher than 0.70, including the Global Health Ranking ($\alpha = 0.96$). The item-total correlations obtained values lower than 0.30 only in the Social Interaction Quality, Sleep, Social Function and Global Health Ranking dimensions. These results confirmed adequate psychometric properties of the scale and validity in the use of the measures. We can observe all this data in Table 4.

Assessment of the literacy levels

Figure 1 reflects the distribution of Health Literacy

adequacy levels. In this sample, it was observed that the levels of Health Literacy adequacy were low. The combined prevalence of inadequate and problematic levels was above 60% in all dimensions of health literacy.

In the domain of General Literacy, it was found that 74% of the patients were in inadequate or problematic levels (limited literacy), in the domain of Disease Prevention Literacy the value of those who are within the inadequate or problematic is 67%, and in Health Promotion Literacy 83% of those surveyed have limited literacy. In the Health Care Literacy index, about 67% present limited literacy. (Figure 1)

Results of QL in CKD

In table 5, we can see that the dimensions with the worst score are the Professional Activity dimension (26.77) and Disease Weight (29.20). On the other hand, the dimensions with the best score were Dialysis Staff Encouragement (82.46) and Social Support (77.99).

Table 4. Psychometric Properties of the KDQOL-SF Scale

Index	Cronbach's Alpha	Item-Total Correlation
ESRD – targeted Areas		
Symptoms/Problems (14a - k, l) 12 items	0.87	0.33 – 0.69
Effects of Kidney Disease on Daily Life (15a - h) 8 items	0.85	0.44 – 0.74
Weight of Kidney Disease (12a - d) 4 items	0.63	0.39 – 0.47
Occupational Activity (20, 21) 2 items	0.57	0.41 – 0.41
Cognitive Function (13 b, d, f) 3 items	0.77	0.56 – 9.69
Quality of Social Interaction (13 a, c, e) 3 items	0.38	0.08 – 0.37
Sexual Function (16 a, b) 2 items	-	-
Sleep (17,18 a, c) 4 items	0.57	0.17 – 0.52
Social Support (19 a, b) 2 items	0.71	0.55 – 0.55
Encouragement from Dialysis Staff (24 a, b) 2 items	0.82	0.70 – 0.70
Patient Satisfaction (23) 1 item	-	-
36-item health survey (SF-36)		
Physical Function (3a-j) 10 items	0.92	0.45 – 0.82
Physical Condition (4a-d) 4 items	0.91	0.71 – 0.86
Pain (7, 8) 2 items	0.90	0.83 – 0.83
General Health (1, 11a-d) 5 items	0.70	0.42 – 0.59
Emotional Well-Being (9b, c, d, f, h) 5 items	0.83	0.50 – 0.78
Emotional Function (5a-c) 3 items	0.87	0.71 – 0.82
Social Function (6, 10) 2 items	0.33	0.20 – 0.20
Energy and Fatigue (9a, e, g, i) 4 items	0.83	0.65 – 0.72
Overall Health Rating (all items from SF-36)	0.96	<0.30 – 0.80

Item-total correlation presented in the form of range, where the minimum corresponds to the lowest value of item-total correlation found and the maximum corresponds to the highest value of item-total correlation found

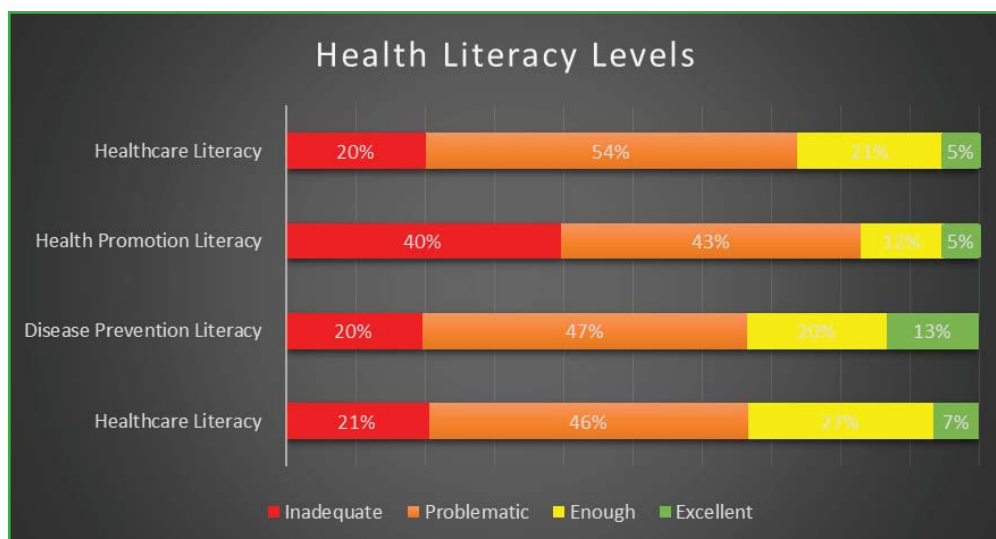
**Figure 1. literacy levels**

Table 5. Dimensions Scores of KDQOL-SF Scale

	M	DP
ESRD – targeted Areas		
Symptoms/Problems (14a - k, l) 12 items	71.84	18.89
Effects of Kidney Disease on Daily Life (15a - h) 8 items	62.95	23.52
Weight of Kidney Disease (12a - d) 4 items	29.20	22.43
Occupational Activity (20, 21) 2 items	26.77	36.28
Cognitive Function (13 b, d, f) 3 items	74.72	20.10
Quality of Social Interaction (13 a, c, e) 3 items	76.74	19.86
Sexual Function (16 a, b) 2 items	71.58	32.43
Sleep (17,18 a, c) 4 items	63.94	18.04
Social Support (19 a, b) 2 items	77.99	27.29
Encouragement from Dialysis Staff (24 a, b) 2 items	82.46	23.54
Patient Satisfaction (23) 1 item	70.71	23.13
36-item health survey (SF-36)		
Physical Function (3a-j) 10 items	49.54	29.18
Physical Condition (4a-d) 4 items	45.86	31.05
Pain (7, 8) 2 items	57.35	29.93
General Health (1, 11a-d) 5 items	39.48	18.79
Emotional Well-Being (9b, c, d, f, h) 5 items	69.36	21.32
Emotional Function (5a-c) 3 items	54.69	31.68
Social Function (6, 10) 2 items	57.19	28.74
Energy and Fatigue (9a, e, g, i) 4 items	52.00	22.78
Overall Health Rating (all items from SF-36)	60.38	15.37

In Table 6, the results of the Student's T-test for two independent samples are presented, for comparison of the SF-36 dimensions values of the sample of this study and the sample of Ferreira and Santana (2003) study that established the reference values for the Portuguese population. We found that the score of all dimensions is lower

in the sample presented here when compared with the standard values for the Portuguese population. We can also infer that there is statistically significant evidence ($p < 0.001$) to affirm that chronic renal patients have lower QL than the rest of the population.

Table 6. Student's t-test - Statistical inference dimensions SF-36

36-item health survey (SF-36)	Reference value	Sample value	Test value
Physical Function	75.27	49.54	$p < 0.001$
Physical Condition	71.21	45.86	$p < 0.001$
Pain	63.34	57.35	$p < 0.001$
General Health	55.83	39.48	$p < 0.001$
Emotional Well-Being	64.04	59.36	$p < 0.001$
Emotional Function	73.56	54.69	$p < 0.001$
Social Function	74.95	57.19	$p < 0.001$
Energy and Fatigue	58.43	52.00	$p < 0.001$

Relationship Between Health Literacy and Quality of Life Among Chronic Kidney Disease Patients in a Regular Hemodialysis Program

Table 7 presents the results of the linear regressions to assess the association of general literacy with the global health ranking. In Model 1, unadjusted, a positive effect of general literacy on the global health ranking was observed, $\beta = 0.87$ ($p < 0.001$). The effect remained, $\beta = 0.78$ ($p < 0.001$) when the variables of the area of residence, sex, literacy qualifications, age and

duration of hemodialysis were included in the model. The results suggest that for each point higher in the literacy scale, the global health ranking rises on average 0.78 points. Among these covariates, a significant effect was detected in age, $\beta = -0.18$ ($p = 0.013$), suggesting an average reduction of 0.18 points in the scale of health ranking for each additional year of age.

Table 7. Linear regressions for evaluating the association of general health literacy with global health ranking

	Model 1: Unadjusted Model			Model 2: Adjusted for Covariates		
	β (SE)	IC 95%	p-value	β (SE)	IC 95%	p-value
General Literacy	0.87 (0.12)	(0.62; 1.11)	$p < 0.001$	0.78 (0.13)	0.53; 1.03	$p < 0.001$
Residence Area						
North	-	-	-	3.11 (2.23)	(-1.25; 7.49)	$p = 0.162$
Center	-	-	-	0.77 (2.05)	(-3.23; 4.78)	$p = 0.705$
Lisbon	REF	REF	REF	REF	REF	REF
Gender						
Male	-	-	-	3.54 (1.81)	(-0.01; 7.09)	$p = 0.050$
Female	REF	REF	REF	REF	REF	REF
Literary qualifications						
\leq Complete 1st cycle	-	-	-	-2.81 (3.00)	(-8.69; 3.07)	$p = 0.348$
Complete EB	-	-	-	0.62 (3.17)	(-5.60; 6.84)	$p = 0.845$
Complete Esec	-	-	-	2.47 (3.24)	(-4.88; 7.82)	$p = 0.650$
Complete sup	REF	REF	REF	REF	REF	REF
Age	-	-	-	-0.18 (0.07)	-0.32; -0.04	$p = 0.013$
Duration of hemodialysis	-	-	-	-0.26 (0.15)	-0.56; 0.03	$p = 0.081$

EB, Basic Education; Esec, Secondary Education; Esup, Higher Education; age and duration of hemodialysis measured in years Results presented in the format β (SE), 95% CI, 95% Confidence Interval; REF= reference category for categorical variables

Discussion

In the evaluation of HL, it was observed that 73.8% of the patients exhibited Limited HL (inadequate or problematic), a value higher than what has been reported in the literature, which ranges from 59.5% (4), to 61% (20). The Health Promotion Index also showed high levels of Limited HL, with approximately 83%, surpassing the values reported for the Portuguese population, which was 60.3% (4). Similarly, the

Disease Prevention Index indicated limited HL in 67% of the respondents, which is higher than the 55.1% reported during the validation of the instrument for the Portuguese population (4). In line with the aforementioned data, the Health Care Index showed a Limited HL value of 67%, exceeding the value reported, which was 61% (4). To better interpret and discuss the obtained data, it will be important in the future

to conduct a study with a more representative sample of chronic renal patients in a regular hemodialysis program.

These differences in the results of our sample compared to the literature found are believed to be primarily due to the higher age of our sample compared to other studies, and the fact that the majority of the sample had low literacy qualifications, with almost 50% of patients falling in the category of \leq 1st cycle completed.

The KDQOL-SF scale demonstrated psychometric properties that were identical to those of the consulted studies. Across the 19 dimensions, Cronbach's alpha was below 0.70 for only 5 dimensions (Renal Disease Weight, $\alpha = 0.63$, Social Interaction Quality, $\alpha = 0.38$, Sleep, $\alpha = 0.57$, and Social Function, $\alpha = 0.33$). A similar situation was observed by Ferreira and Anes during their validation of this instrument for the Portuguese population, wherein they reported a Cronbach's alpha lower than 0.7 for the Social Function ($\alpha = 0.359$) and Renal Disease Weight ($\alpha = 0.645$) dimensions (9).

Regarding the obtained results, it was observed that the dimensions with the lowest score were the Professional Activity dimension (26.77) and the Weight of the Disease (29.20), which aligns with the findings (21,13,22). In contrast, the dimensions with the highest scores were Dialysis Personnel Encouragement (82.46) and Social Support (77.99), which is consistent with the work carried (22).

Finally, an attempt was made to establish a relationship between HL and QL levels, and it was observed that in our model, for each point increase in the HL scale, there was an improvement of 0.78 points in the global health ranking on the QL scale. Additionally, for each year that passed, the global health ranking decreased by 0.18 points. This result is consistent with those presented by Skoumalova et al., who established

a direct relationship between the level of HL and the QL of chronic renal patients on a regular hemodialysis program (13). A similar evaluation study of HL and QL in chronic diseases (Diabetes) was presented by Sayah et al., which yielded comparable results in the association between HL level and QL; however, different measuring instruments were utilized (23). In this study, it was proven that patients with diabetes who had an adequate level of literacy exhibited a better score in the Mental Component Summary (MCS). However, they were unable to demonstrate the same for the Physical Component Summary (PCS) dimension.

Conclusion

Having achieved the objectives set forth in this study, it has been determined that the levels of health literacy (HL) among patients undergoing regular hemodialysis program are of concern.

Regarding quality of life (QL), it was observed that the domains of dialysis personnel encouragement (82.46) and social support (77.49) have the highest scores, while the domains of professional activity (26.77) and weight of renal disease (29.2) have the lowest scores.

An evaluation of the relationship between HL level and QL of chronic renal patients revealed a significant association, with the model indicating that for each additional point on the literacy scale, the QL score increased by 0.78 points. The same model also identified that for each year of life passed, the QL score decreased by 0.18 points.

Given the demonstrated association between HL and QL, it will be essential for future studies to evaluate the impact of intervention plans aimed at improving HL. These intervention plans should be developed in three domains: knowledge about healthcare, disease promotion, and disease prevention.

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Conflicts of interest: There is no Conflicts of interest.

Consent for publication: Not applicable

Ethical considerations: The present study was

approved by the ethics committee of the company where the clinics are located. All patients signed the informed, voluntary, and informed consent for participation in the research according to the Helsinki Declaration and the Oviedo Convention

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