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Research Article

Impact of Mental Health Literacy on Mental Health and Renal Function in Dialysis Patients: A Cross-Sectional Study

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Abstract

Aim: This article aims to assess Mental Health Literacy (MHL) in dialysis patients and examine their impact on anxiety, depression and physical health.
Material and Method: The study was conducted in the Hemodialysis Unit of Karaman Training and Research Hospital between March and June 2024. A total of 87 patients who met the inclusion criteria and agreed to participate were included in the study. Data were collected using a semi-structured sociodemographic form, Mental Health Literacy Scale, Hamilton Depression Scale and Hamilton Anxiety Scale. Biochemical parameters were obtained from electronic patient records.
Results: The frequency of depression was 45%. There was no significant difference in MHL points among individuals with and without depression. Furthermore, no correlation was found between MHL and duration of disease or dialysis. A significant relationship was found between Total and Resource subscale scores of MHL and estimated glomerular filtration rate (eGFR).
Conclusion: The frequency of depression was higher in dialysis patients than in the general population. Albeit no significant difference in MHL was observed between patients diagnosed with depression and those without, the significant relationship between MHL and eGFR suggests that interventions to increase MHL may have positive effects on disease progression.

Keywords: Mental health literacy, depression, hemodialysis, creatinine, renal function

INTRODUCTION

Mental health literacy (MHL) encompasses a range of competencies, including the capacity to prevent the onset of mental illness, the ability to identify early signs of mental distress, effective self-management techniques for non-advanced problems, and the skills required to provide assistance to others (1). For example, in an Australian study, when participants were presented with a case study of a patient with depression, only 39% correctly identified the condition, and 11% incorrectly considered depression to be a physical ailment (2). These deficiencies in MHL result in impaired communication between patients and health professionals (3). This lack of knowledge also affects treatment response and the decision to seek medical help for mental disorders. In one study, the attribution of psychiatric illnesses to metaphysical causes was shown to lead to non-medical treatment seeking and impaired treatment collaboration (4). An important goal of MHL efforts is to reduce stigma against mental disorders. In one study, it was reported that stigmatisation not only affects the decision to seek medical help but also causes negative physical outcomes (5).

The experience of chronic illness has the potential to alter an individual's perspective on life, with the potential for significant psychological effects (6). Despite the encouraging developments in the treatment of chronic physical illnesses, the acceptance of certain consequences remains a significant challenge for the individual. This can result in adverse mental health outcomes, particularly depression and anxiety (7). For these reasons, it is pivotal that interventions are developed to enhance self-help skills in the context of chronic physical illnesses (8). In this context, a study conducted in Iran demonstrated that the provision of psychoeducation to patients with Type 2 Diabetes led to an increase in treatment compliance and MHL (7). Consequently, it is hypothesised that a range of psychosocial interventions can address the psychological needs associated with chronic physical diseases (9).

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Mental health literacy is an issue that is becoming increasingly foremost in the field of health. A review of the literature showed that there is a lack of research examining the relationship among MHL, psychiatric illness and disease parameters in patients on dialysis. Given the evidence that psychoeducation has a beneficial effect on depression in dialysis patients (10) and also has a positive impact on treatment adherence(11), it is essential to assess MHL in this patient group. The goal of this research was twofold: first, to assess and improve the MHL of dialysis patients; second, to investigate the effect of MHL on depression, anxiety and renal function in dialysis patients.

In this context, the hypotheses to be tested in our study are as follows.

Hypothesis 1:

H0: MHL has no effect on depression and anxiety levels in dialysis patients,

H1: MHL affects depression and anxiety levels in dialysis patients.

Hypothesis 2:

H0: MHL has no effect on renal function in dialysis patients,

H1: MHL affects renal function in dialysis patients.

MATERIAL AND METHOD

This research was conducted at Karaman Training and Research Hospital Haemodialysis Unit, March-June 2024. In the specified time period, 112 patients were followed in the haemodialysis unit, undergoing haemodialysis 3 days a week. Patients were informed about the study procedure and the social, personal and scientific benefits of the study. Inclusion criteria: 1. Diagnosed end-stage renal disease, 2. age >18 years, 3. haemodialysis treatment more than 6 months. Exclusion criteria: 1. a lack of willingness to participate in the study, 2. severe cognitive, sensory and motor impairment, 3. illiteracy. G*Power was used to determine the sample size. Calculations using a 5% margin of error and an effect size of 0.3 to achieve 80% power showed that a minimum of 82 participants were required. Ethical approval was obtained from the Ethics Committee of Karamanoğlu Mehmetbey University Faculty of Medicine (dated 27.02.2024, no. 01.2024/03).

Patients who were not included in the study; 8 patients were excluded because they were illiterate, 6 patients were excluded because of severe cognitive impairment, 6 patients were excluded because of severe visual/ hearing impairment, 3 patients were excluded because they did not want to participate and 2 patients were excluded because they had not received dialysis treatment for more than 6 months". After assessments, written informed consent was obtained from patients meeting inclusion and no exclusion criteria (n=87). Interviews with participants to optimise completion of the scales and completion of the scales were conducted on the day after dialysis. Data were collected using a semi-structured socio-demographic data form. Participants were asked to complete the Mental Health Literacy Scale. Then, Hamilton Depression Scale and the Hamilton Anxiety Scale were administered. These scales have been shown to be valid and reliable in evaluating anxiety and depression in haemodialysis patients (12). In addition, biochemical parameters were recorded during the assessment from the patients' electronic records.

Data Collection Tools

Sociodemographic data form: The researcher-designed personal information form was administered face-to-face to obtain data on age, gender, educational status, employment status, presence of additional physical and psychiatric illnesses, and duration of dialysis. In addition, serum urea, creatine, sodium, haemoglobin, eGFR (estimated glomerular filtration rate), calcium and phosphorus levels were recorded from the patients' electronic records.

Hamilton Depression Scale (Ham-D): It is a 17-item self-report instrument for the assessment of depressive symptoms experienced over the past week (13). The maximum total score on the Hamilton Scale for Depression is 53. Points between 0 -7 are classified as "no depression," 8-15 as "mild depression," 16-28 as "moderate depression," and scores of >28 as "severe depression." The test-retest reliability, internal consistency, and inter-rater reliability coefficients for the Turkish version were .85, .75, .87, and .98, respectively (14).

Hamilton Anxiety Scale (Ham-A): The scale is interviewer-administered and comprises a total of 14 items, that ask about both mental and physical symptoms. The point for each item ranges between 0-4, while the total scale score ranges from 0-56. Items 1, 2, 3, 5 and 6 of the scale are designed to assess psychic anxiety, while items 4, 7-13 are designed to evaluate somatic anxiety. The validity and reliability study of the scale was conducted by Yazıcı et al. in Türkiye. In the Turkish version, the item-specific correlation coefficients were each 0.72, whereas the overall correlation coefficient was 0.94 (15).

Mental Health Literacy Scale (MHL): The Mental Health Literacy Scale, originally developed by Jung et al., underwent a Turkish validity and reliability assessment conducted by Göktaş et al. This scale includes three sub-dimensions and a total of 22 items. These sub-dimensions are designated as follows: Knowledge-Oriented MHL (items 1-10), Beliefs-Oriented MHL (items 11-18), and Resource-Oriented MHL (items 19-22). The scale's scores range from 0 to 22. The initial 18 questions, which cover the first two sub-dimensions, follow a six-point Likert format with the response options: 'strongly agree', 'agree', 'undecided', 'disagree', 'strongly disagree', and 'don't know'. The four questions within the Resource-Oriented MHL sub-dimension are answered with 'yes' or 'no'. In this scoring system, 'strongly agree', 'agree', and 'yes' responses are assigned 1 point, while all other responses receive 0 points. Additionally, items 11-18, which belong to the Belief-Oriented RSF subscale, are reverse scored. The internal consistency analysis coefficient of the Turkish version was 0.71 and the test-retest coefficient was 0.72 (16,17).

Collection of Blood Samples and Biochemical Analyses: Blood analysis to measure urea, creatinine, eGFR, calcium, haemoglobin, sodium, potassium and phosphorus levels was performed between 08:00 and 10:00 in the morning on a nondialysis day. Blood samples were taken from the antecubital vein with a sterile needle and immediately placed in two separate tubes, 2 ml with EDTA and 5 ml without anticoagulant, and immediately centrifuged. Serum samples were analysed for serum urea, creatinine, eGFR, calcium, sodium, potassium and phosphorus levels by spectrophotometry using a Beckman Coulter AU5800 analyser (Beckman Coulter, Nyon, Switzerland) and haemoglobin levels were measured using a BC-6800 (Mindray, Shenzhen, China).

Statistical Analysis

Statistical Package for the Social Sciences (SPSS) version 25 Windows (SPSS Inc., Chicago, IL, USA) was used for statistical analyses. All participants were classified as depressed (45%) or non-depressed (55%) based on the cutoff score of the Ham-D (HamD>7, indicative of depression). The normality of the variables was evaluated using both visual methods (such as histograms and probability plots) and the Shapiro-Wilk test for analytical assessment. For comparing categorical data between the two groups, the chi-squared test was employed. Continuous variables were analyzed using the t-test for normally distributed data and the Mann-Whitney U test for data that did not follow a normal distribution. Relationships between variables were examined using the Spearman correlation test, considering p-values below 0.05 to be statistically significant.

RESULTS

The mean age of patients with depression (61.18±15.78) was higher than that of patients without depression (53.63±16.53) (p=0.033). The plurality of depressed patients were married (71.8%), had completed primary school (66.7%), whereas the majority of non-depressed patients were married (66.7%) and had completed primary school (58.3%) (p>0.05). The duration of disease and dialysis did not differ significantly between the two groups (p=0.09, p=0.982). The majority of the depressed group (61.5%) were unemployed, whereas the majority of the non-depressed group (52.1%) were retired (p=0.047) (see Table 1).

Table 1. Comparison of socio-demographic data between depressed and non-depressed patients

		Depressed (n=39)	Non depressed (n=48)	χ^2/t	df	p
Age mean(SD)		61.18 (15.78)	53.63 (16.53)	2.16	85	0.03[a]
Gender n (%)	**Male**	22 (56.4)	37 (77.1)	4.21	1	0.04[b]
	Female	17 (43.6)	11 (22.9)			
Marital status n (%)	**Married**	28 (71.8)	32 (66.7)	2.36	3	0.50[b]
	Single	6 (15.4)	12 (25.0)			
	Divorced	1 (2.6)	0 (0.0)			
	Widowed	4 (10.3)	4 (8.3)			
Education n (%)	**Primary school**	26 (66.7)	28 (58.3)	0.64	3	0.88b
	Middle school	5 (12.8)	8 (16.7)			
	High school	6 (15.4)	9 (18.8)			
	University	2 (5.1)	3 (6.3)			
Income n (%)	**Low**	12 (30.8)	7 (14.6)	4.22	2	0.12[b]
	Medium	25 (64.1)	40 (83.3)			
	High	2 (5.1)	1 (2.1)			
Psychiatric illness n (%)	**Yes**	8 (20.5)	6 (12.5)	1.02	1	0.31[b]
	No	31 (79.5)	42 (87.5)			
Disease duration n (%)	**<1 year**	4 (10.3)	0 (0.0)	6.48	3	0.09[b]
	≥1-<3 years	5 (12.8)	5 (10.4)			
	≥3-<6 years	7 (17.9)	6 (12.5)			
	≥6 years	23 (59.0)	37 (77.1)			
Dialysis duration n (%)	**<1 year**	6 (15.4)	7 (14.6)	0.17	3	0.98[b]
	≥1-<3 years	11 (28.2)	12 (25.0)			
	≥3-<6 years	8 (20.5)	10 (20.8)			
	≥6 years	14 (35.9)	19 (39.6)			
Employment status n (%)	**Employed**	2 (5.1)	6 (12.5)	6.12	2	0.047[b]
	Unemployed	24 (61.5)	17 (35.4)			
	Retired	13 (33.3)	25 (52.1)			
Living area n (%)	**City center**	30 (76.9)	38 (79.2)	4.65	2	0.09[b]
	District	5 (12.8)	1 (2.1)			
	Village/town	4 (10.3)	9 (18.8)			

a: independent T test, b: Chi square test

The comparison of the biochemical values of both groups is shown in Table 2. The mean eGFR of patients with depression (25.24±11.52) was higher than that of patients without depression (22.02±14.85) (p=0.044). The mean sodium level of patients with depression (133.02±21.25) was lower than that of patients without depression (137.38±2.79) (p=0.039). The two groups did not exhibit any statistically significant differences in the levels of urea, creatinine, calcium, hemoglobin, potassium, or phosphorus. No significant differences were observed in the overall and subscale scores of the MHL scale between the two groups (p>0.05) (Table 2).

Table 2. Comparison of biochemical data and MHL scores of patients with and without depression

Variable	Depressed (n=39) Mean (SD)	Non-depressed (n=48) Mean (SD)	t/df	p
Urea (mg/dL)	39.65 (19.01)	40.66 (20.05)	901/85	0.07[a]
Creatinine (mg/dL)	2.73 (1.21)	3.14 (1.16)	716/85	0.06[a]
eGFR	25.24 (11.52)	22.02 (14.85)	700/85	0.044[a]
Ca^{++} (mg/d)	8.80 (0.62)	8.85 (0.72)	855/85	0.48[a]
Hemoglobin(g/dL)	10.89 (1.41)	11.06 (1.61)	-0.517/85	0.60[b]
Na^{+} (mmol/L)	133.02 (21.25)	137.38 (2.79)	695/85	0.03[a]
K^{+} (mmol/L)	4.34 (1.13)	4.35 (1.02)	913/85	0.84[a]
P^{+} (mg/dL)	4.52 (1.26)	4.97 (1.28)	-1.63/85	0.10[b]
MHL-knowledge	6.31 (2.26)	7.08 (2.42)	762/85	0.13[a]
MHL-beliefs	3.28 (2.05)	3.06 (1.70)	0.545/85	0.58[b]
MHL-resource	2.87 (1.10)	2.92 (1.25)	885/85	0.64[a]
MHL-total	12.46 (4.06)	13.06 (4.05)	-0.687/85	0.49[b]

a: Mann Whitney U, b: independent T test; MHL: mental health literacy, eGFR: estimated glomerular filtration rate, Ca^{++}: calcium, Na^{+}: sodium, K^{+}: potassium, P^{+}: phosphorus

Table 3 illustrates the correlation among the psychometric test results for the participants and the duration of dialysis, disease duration and eGFR values. The results indicated that no statistically significant relationship was observed among the MHL scale and subscale scores and Ham-D, Ham-A scores, disease duration and dialysis duration (p>0.05). A statistically significant correlation was identified among eGFR and both MHL-Source and MHL-Total scores (r=0.282, p<0.01; r=0.217, p<0.01, respectively).

Table 3. Correlations between psychometric test scores and disease duration, dialysis duration and eGFR of all participants

		MHL-knowledge	MHL-beliefs	MHL-resource	MHL-total	Duration of Illness	Duration of dialysis	HamD	HamA	eGFR
MHL-knowledge	r	–								
MHL-beliefs	r	0.28**	–							
MHL-resource	r	0.44***	0.21*	–						
MHL-total	r	0.85***	0.67***	0.64***	–					
Duration of illness	r	-0.11	0.08	0.04	-0.01	–				
Duration of dialysis	r	-0.16	0.01	-0.14	-0.12	0.63***	–			
Ham-D	r	-0.10	0.03	-0.04	-0.04	-0.15	-0.01	–		
Ham-A	r	-0.11	-0.01	-0.04	-0.07	-0.11	0.02	0.88***	–	
eGFR	r	0.17	0.06	0.28**	0.21**	-0.10	-0.13	0.09	0.12	-

*p<0.05, **p<0.01, ***p<0.001; Spearman Correlation test was used; MHL: mental health literacy, eGFR: estimated glomerular filtration, Ham-D: Hamilton Depression Scale, Ham-A: Hamilton Anxiety Scale

DISCUSSION

This research aimed to assess the level of mental health literacy among individuals with end-stage renal failure who are undergoing hemodialysis therapy. Moreover, the research sought to determine the freuqency of depressive symtomps among these patients, as well as to examine the correlation between these psychological states and biochemical data related to the disease.

The findings showed that 45% of the participants were suffered from depression. No significant differences were observed in MHL levels among patients with and without depression. Furthermore, MHL was not associated with disease duration or dialysis duration. A correlation was identified between the MHL-Total,MHL-Source scores and the eGFR.

A comprehensive meta-analysis conducted by Palmer et al. revealed that 39% of dialysis patients exhibited depressive symptoms according to rating scales, with approximately one-quarter of them being diagnosed with depression following a diagnostic interview (18). A different study

determined that the frequency of depressive symptoms among patients undergoing dialysis treatment was 27% (19). Similarly, the frequency of depression in our study was found to exceed the general population prevalence (7.5%) (20). In this context, chronic physical conditions such as end-stage renal failure may be an element of risk for depression. It has been reported that factors such as disturbances in calcium metabolism, oxidative stress, increased amounts of pro-inflammatory cytokines, nutritional disturbances and disease-related disability may be the causes of depression in dialysis patients (21-24).

Gazmararian et al. (2005) found that people with reduced MHL were 2.7 times more prone to experiencing depression than those with elevated MHL (25). Similarly, Amone-P'olak et al. reported that MHL level predicts the occurrence of mental problems such as depression (26). A lack of adequate information about psychological health issues, stigmatisation and difficulties in accessing health services have been identified as risk factors for various psychiatric disorders, especially depression (27). A review of the literature reveals no studies that examine the association between MHL and psychiatric disorders in patients undergoing haemodialysis treatment. Consequently, although there is no data available for comparison with the results of our study, there are researches on the psychological effects of MHL in diabetes, which is one of the leading causes of end-stage renal failure. In one study, low MHL was demonstrated to be associated with diabetes-related burnout in participants with Diabetes Mellitus. Similarly, a research conducted in Poland demonstrated that brief psychological interventions were effective in reducing diabetes-related burnout and stress burden (28). However, a meta-analysis investigating the effect of psychological interventions in diabetes demonstrated that no psychological intervention was more efficacious than traditional methods in reducing diabetes-related distress (29). Similarly, our research did not identify a significant relationship among MHL, Ham-D and Ham-A scores. Although it remains challenging to elucidate these contradictory findings, potential explanations include discrepancies in study design, the psychological resilience of individuals, the assessment tools employed, and cultural variations. For instance, previous studies have reported that the effects of MHL have mostly been studied in Western societies, and that cultural values may influence beliefs about mental health and coping strategies for mental illness (30).

One of the most notable findings of our study was the significant relation between MHL-Total and the MHL-Source point and eGFR. A review of the literature revealed no studies investigating the association between MHL and disease-related parameters in haemodialysis patients. Given these findings, it can be postulated that interventions designed to enhance the MHL in haemodialysis patients may exert a beneficial influence on the progression of the disease. For instance, psychoeducational interventions in diabetic patients have been demonstrated to be linked with lower fasting glucose levels and enhanced treatment adherence (31). Furthermore, a reduction in MHL has been linked to a decline in self-care behaviours and an adverse impact on the progression of the illness (32). Given the positive effect of psychoeducational interventions on self-efficacy, adherence and mental well-being in dialysis patients (33), it is critical to develop practices that improve MHL in these patients. In this regard, it is important to increase mental health screening and services in dialysis centres. In addition, interventions such as psychoeducation (34) and cognitive behavioural therapy (35) for patients and their families can increase MHL levels and have a positive impact on disease prognosis.

While our study yielded noteworthy findings, it is substantial to acknowledge the presence of certain limitations. Limitations to the generalisability of our findings may be influenced by the fact that our study was conducted at a single site, the relatively small sample size, and the homogeneity of participants' socio-cultural backgrounds. In addition, the scale used to measure MHL is based on self-report, which may result in response bias. The lack of use of diagnostic tools such as the SCID may have led to undiagnosed psychiatric conditions being missed, thereby affecting the results obtained. Finally, it is not possible to establish a definitive cause-and-effect relationship due to the nature of a cross-sectional study.

CONCLUSION

To conclude, our results show a high frequence of depressive symptoms among dialysis patients. No significant difference was observed in MHL among patients with and without depression. However, a significant association was identified among MHL and estimated glomerular filtration rate (eGFR). These findings indicate that interventions aimed at enhancing MHL may have a beneficial impact on disease progression. Further large-scale and multicentre studies are required so as to gain a deeper understanding of the impacts of MHL on chronic disease management and outcomes.

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