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Editorial Board Member of *World Journal of Psychiatry*, Sari Goldstein Ferber, PhD, Affiliate Associate Professor, Department of Psychological and Brain Sciences, University of Delaware, Newark, DE 19716, United States. sgf@udel.edu

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Observational Study

Mediating role of social support in dysphoria, despondency, and quality of life in patients undergoing maintenance hemodialysis

Xiang Zhou, Hong Jiang, Yi-Peng Zhou, Xiao-Yu Wang, Hai-Yan Ren, Xue-Fei Tian, Qing-Qing Zhang

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Xiang Zhou, Hong Jiang, Yi-Peng Zhou, Xiao-Yu Wang, Qing-Qing Zhang, Department of Nephrology, People's Hospital of Xinjiang Uygur Autonomous Region, Xinjiang Clinical Research Center for Kidney Disease, Urumqi 832000, Xinjiang Uygur Autonomous Region, China

Hai-Yan Ren, Department of Endocrinology and Metabolism, People's Hospital of Xinjiang Uygur Autonomous Region, Urumqi 832000, Xinjiang Uygur Autonomous Region, China

Xue-Fei Tian, Section of Nephrology, Department of Internal Medicine, Yale University School of Medicine, New Haven, CT 06510, United States

Corresponding author: Qing-Qing Zhang, MBBS, Associate Chief Nurse, Department of Nephrology, People's Hospital of Xinjiang Uygur Autonomous Region, Xinjiang Clinical Research Center for Kidney Disease, No. 91, Tianchi Road, Tianshan District, Urumqi 832000, Xinjiang Uygur Autonomous Region, China. qingqizhang@163.com

Abstract

BACKGROUND

Dysphoria and despondency are prevalent psychological issues in patients undergoing Maintenance Hemodialysis (MHD) that significantly affect their quality of life (QOL). High levels of social support can significantly improve the physical and mental well-being of patients undergoing MHD. Currently, there is limited research on how social support mediates the relationship between dysphoria, despondency, and overall QOL in patients undergoing MHD. It is imperative to investigate this mediating effect to mitigate dysphoria and despondency in patients undergoing MHD, ultimately enhancing their overall QOL.

AIM

To investigate the mediating role of social support in relationships between dysphoria, despondency, and QOL among patients undergoing MHD.

METHODS

Participants comprised 289 patients undergoing MHD, who were selected using a random sampling approach. The Social Support Rating Scale, Self-Rating Anxiety Scale, Self-Rating Depression Scale, and QOL Scale were administered. Correlation analysis was performed to examine the associations between social support, dysphoria, despondency, and QOL in patients undergoing MHD. To

assess the mediating impact of social support on dysphoria, despondency, and QOL in patients undergoing MHD, a bootstrap method was applied.

RESULTS

Significant correlations among social support, dysphoria, despondency, and quality in patients undergoing MHD were observed (all $P < 0.01$). Dysphoria and despondency negatively correlated with social support and QOL ($P < 0.01$). Dysphoria and despondency had negative predictive impacts on the QOL of patients undergoing MHD ($P < 0.05$). The direct effect of dysphoria on QOL was statistically significant ($P < 0.05$). Social support mediated the relationship between dysphoria and QOL, and this mediating effect was significant ($P < 0.05$). Similarly, the direct effect of despondency on QOL was significant ($P < 0.05$). Moreover, social support played a mediating role between despondency and QOL, with a significant mediating effect ($P < 0.05$).

CONCLUSION

These findings suggest that social support plays a significant mediating role in the relationship between dysphoria, despondency, and QOL in patients undergoing MHD.

Key Words: Maintenance hemodialysis; Social support; Dysphoria; Despondency; Quality of life; Mediating effect

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Core Tip: Dysphoria and despondency are prevalent negative emotional experiences in patients undergoing maintenance hemodialysis (MHD), significantly affecting both prognosis and overall quality of life (QOL). Enhancing social support can improve the QOL of patients undergoing MHD. This study surveyed 289 patients undergoing MHD using questionnaires to examine the mediating role of social support in the relationship between dysphoria, despondency, and QOL. The findings contribute to the development of a theoretical foundation for psychological interventions in patients undergoing MHD, ultimately aiming to effectively alleviate dysphoria and despondency and subsequently enhance their overall QOL.

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INTRODUCTION

Maintenance Hemodialysis (MHD) is an enduring and often lifelong therapy for patients with end-stage kidney disease. This treatment is known for its lengthy and demanding process, which frequently results in a range of psychological challenges for patients[1]. Numerous studies have demonstrated a high prevalence of psychological disorders in patients undergoing MHD, with dysphoria and despondency being particularly prevalent[2]. These psychological issues have a significant impact on the physical and mental well-being of patients and can diminish their sense of hope for survival. Social support refers to the emotional and material assistance individuals receive from their social relationships, including family members, friends, significant others, and various organizations[3]. Strong social support has been shown to positively affect a patient's quality of life (QOL). Research has consistently revealed negative associations among social support, dysphoria, and despondency, highlighting the role of social support in reducing the risk of these psychological problems[4,5]. Additionally, social support is positively correlated with QOL, with improved social support leading to enhanced QOL[6]. Despite the existing body of research on dysphoria, despondency, social support, and QOL in patients undergoing MHD[7-10], few studies have investigated the underlying mechanisms through which social support influences dysphoria, despondency, and QOL in these patients. This study aimed to explore the intricate relationships between social support and dysphoria, despondency, and QOL in patients undergoing MHD. Furthermore, this study aimed to investigate the mediating role of social support in the relationship between dysphoria, despondency, and QOL among these patients. The ultimate goal of this study was to provide a theoretical foundation for clinical healthcare professionals to deliver targeted treatments and comprehensive care for individuals undergoing MHD.

MATERIALS AND METHODS

Subjects

Between January and December 2022, a random sampling method was employed to select patients undergoing MHD from the hemodialysis center of the People's Hospital of Xinjiang Uygur Autonomous Region for participation in a questionnaire survey. The demographic information of patients is shown in Table 1. All patients included in this study

Table 1 Demographic information of patients undergoing Maintenance Hemodialysis

Variables	Categories	Number, n (%)
Sex	Male	158 (54.67)
	Female	131 (45.33)
Age	< 45 yr	39 (13.50)
	45-60 yr	128 (44.29)
	> 60 yr	122 (42.21)
Education	Below high school	164 (56.75)
	High school and above	125 (43.25)
Marital status	Married	242 (83.74)
	Single (unmarried, divorced, widowed)	47 (16.26)
Monthly income	< 3000 yuan	55 (19.03)
	3000-5000 yuan	129 (44.64)
	> 5000 yuan	105 (36.33)
Medical insurance status	Medical insurance/social insurance	212 (73.36)
	Self-payment	77 (26.64)

were of biological sex. Inclusion criteria were as follows: (1) Age ≥ 18 years; (2) undergoing regular hemodialysis for a minimum of three months; (3) conscious and free from communication disorders; and (4) willing to participate in the survey. Exclusion criteria included: (1) The presence of a mental disorder or cognitive impairment; (2) experiencing acute infections, acute heart failure, or other severe organ dysfunction; and (3) inability to complete the questionnaire.

Research tools

Social support rating scale: The Social support rating scale version developed by Xiao *et al*[11] was utilized in this study. This scale comprises ten items categorized into three dimensions: Subjective support (items 1, 3-5), objective support (items 2, 6-7), and the utilization of social support (items 8-10). Items 1-4 and 8-10 were single-choice questions. A 4-point Likert scoring method was employed, with items 1-4 scored individually. Item 5 offered five options (A-E). Each option was assigned a score from 1 to 4 ("none" = 1 point, "very little" = 2 points, "general" = 3 points, and "full support" = 4 points). For items 6-7, selecting "no source" was scored as 0, while choosing "the following sources" resulted in points being calculated based on the number of sources selected. The scores for the 10 items were summed to calculate the scale's total score, which ranged from 12 to 66. These scores were divided into three levels: A total score of ≤ 22 indicated a low level of support, a total score of 23-44 denoted a medium level of support, and a total score of 45-66 signified a high level of support. A higher score indicated greater availability of social support. The Cronbach's α coefficient for this scale was 0.808.

Self-rating anxiety scale: The dysphoria scale developed by Zhang *et al*[12] was used in this study. The scale consisted of 20 items scored on a 4-point scale. The total raw score was calculated by adding the scores of the 20 Self-rating anxiety scale (SAS) items. The integer part of this total score, when multiplied by 1.25, yielded the standard score. A cut-off value of 50 points was used to assess dysphoria, with scores below 50 indicating the absence of dysphoria, scores between 50-59 indicating mild dysphoria, scores between 60-69 indicating moderate dysphoria, and scores equal to or greater than 70 indicating severe dysphoria. The Cronbach's α coefficient for this scale was 0.855.

Self-rating depression scale: The 2-item despondency scale developed by Xu *et al*[13] was used. Each item was scored on a 4-point scale. The total raw score was calculated by summing the scores of the 20 Self-rating depression scale (SDS) items, and the integer part of this total score, when multiplied by 1.25, yielded the standard score. A cutoff value of 53 was used to assess despondency, with scores less than 53 indicating the absence of despondency, scores between 53-62 indicating mild despondency, scores between 63-72 indicating moderate despondency, and scores greater than 72 indicating severe despondency. The Cronbach's α coefficient for this scale was 0.8.

QOL scale (SF-36): The SF-36 scale, developed by the Boston Health Research Institute and the Chinese version by Zhejiang University[14], was used. This scale consisted of 36 items distributed across 8 dimensions: Physical Functioning (PF), Role Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role Emotional (RE), and Mental Health (MH). The original scores for each dimension were computed using the summated rating method and converted into a hundred-mark system (0-100)[15]. QOL was assessed based on the overall scores of the physical component summary (PCS) and mental component summary (MCS), with scores for both domains converted into hundred-mark scores[16]. The overall PCS and MCS scores were calculated based on the scores from each dimension: $PCS = PF + RP + BP + GH$ and $MCS = VT + SF + RE + MH$. The Cronbach's α coefficient for this scale was 0.869.

Data collection

A questionnaire survey was conducted to collect the data. Before the survey, approval was obtained from the relevant hospital authorities, and the research's purpose, significance, and ethical aspects were explained to the participants. Informed consent was obtained from all the participants. The distribution and collection of questionnaires were managed by the research investigators. A consistent set of instructions was used in the survey questionnaire to ensure uniformity in the data collection process. Upon completion of the questionnaires, the participants were collected onsite to ensure the responses' authenticity, validity, and completeness. In total, 300 questionnaires were distributed, with 289 valid questionnaires successfully collected, for a recovery rate of 96.33%.

Statistical analysis

SPSS statistical software (version 26.0) was used for data analysis, and the significance level was set at $P < 0.05$. The scores obtained from each scale were described using the interquartile range, and the count data were presented as n (%). Nonparametric and correlation tests were used to analyze the data. The mediating effect was assessed using PROCES.

RESULTS

Analysis of social support

The total social support scores obtained from the 289 patients undergoing MHD ranged from 13 to 60, indicating a moderate overall level of support. Of the participants, 63 (20.80%) were categorized as having a low level of support, 128 (44.29%) as having a medium level of support, and 98 (33.91%) as having a high level of support (Table 2). Based on the different levels of social support, patients undergoing MHD were grouped into three categories: Low, medium, and high levels of support. Subsequently, the levels of dysphoria, despondency, and QOL were analyzed for each group.

Effects of social support on dysphoria

The SAS scores of the 289 patients undergoing MHD had a score of 52 (42, 65), indicating an overall level of mild dysphoria. Among them, 115 (39.79 %) patients did not exhibit dysphoria, 73 (25.26%) had mild dysphoria, 54 (18.69%) had moderate dysphoria, and 47 (16.26%) had severe dysphoria (Table 3). Significant differences were observed in the SAS scores among the low, medium, and high levels of support ($P < 0.05$). Additionally, significant differences were noted in pairwise comparisons among the low, medium, and high support levels ($P < 0.05$; Figure 1A).

Effects of social support on despondency

The median SDS score of the 289 patients had a score of 55 (45, 67), indicating an overall level of mild despondency. Among them, 132 (45.67%) did not experience despondency, 63 (21.80%) had mild despondency, 44 (15.23%) had moderate despondency, and 50 (17.30%) experienced severe despondency (Table 4). Significant differences were observed in the SDS scores between the low, medium, and high support levels ($P < 0.05$). Additionally, significant differences were noted in pairwise comparisons among the low, medium, and high support levels ($P < 0.05$; Figure 1B).

Effects of social support on QOL

Among the 289 patients undergoing MHD, the QOL (PCS) score had a value of 105.11 (80.70, 126.64). Similarly, the QOL (MCS) score had a value of 111.64 (84.74, 130.18; Table 5). Significant differences were noted in the scores of all eight dimensions as well as in QOL (PCS) and QOL (MCS) among the low, medium, and high levels of support ($P < 0.05$). Moreover, significant differences were observed in pairwise comparisons among the low, medium, and high support levels ($P < 0.05$; Table 6).

Correlation analysis among social support, dysphoria, despondency, and QOL

Social support was positively correlated with both QOL (PCS and MCS) ($P < 0.01$). Dysphoria showed a positive correlation with despondency ($P < 0.01$). Dysphoria and despondency were negatively correlated with QOL (PCS and MCS) and social support ($P < 0.01$; Table 7).

Mediating effect of social support among QOL, dysphoria, and despondency

Dysphoria: In the first step, the regression coefficient was examined when dysphoria was considered the independent variable, and PCS and MCS were the dependent variables. Second, the regression coefficient was analyzed with dysphoria as the independent variable and social support as the dependent variable. In the third step, a regression equation was constructed, involving both dysphoria and social support as independent variables and PCS and MCS as dependent variables. The results revealed that dysphoria had a negative predictive effect on PCS and MCS ($\beta = -0.869$, $\beta = -0.823$, $P < 0.05$). Furthermore, dysphoria negatively predicted social support ($\beta = -0.450$, $P < 0.05$). The impact of dysphoria on PCS and MCS decreased when accounting for the presence of social support (β of PCS from -0.869 to -0.267, β of MCS from -0.823 to -0.329, $P < 0.05$). This suggests that social support partially mediated the relationship between dysphoria and QOL (PCS and MCS) in patients undergoing MHD (Table 8).

Despondency: In the first step, the regression coefficient was assessed with despondency as the independent variable and PCS and MCS as the dependent variables. Second, the regression coefficient was investigated with despondency as the independent variable and social support as the dependent variable. In the third step, a regression equation was

Table 2 Various scores of social support in patients undergoing Maintenance Hemodialysis

Items	Number, <i>n</i> (%)	Score range (points)	Score (points)
Subjective support	289 (100.00)	8-32	19 (12, 26)
Objective support	289 (100.00)	1-22	9 (5, 16)
The utilization of social support	289 (100.00)	3-12	7 (5, 10)
Total score	289 (100.00)	13-60	39 (24.5, 46)
Low level of support	63 (20.80)	14-22	20 (18, 21)
High levels of support	128 (44.29)	23-44	37 (30, 41)
High levels of support	98 (33.91)	45-60	49 (46, 53)

Table 3 Dysphoria scores and levels in patients undergoing Maintenance Hemodialysis

	Number, <i>n</i> (%)	Score (points)
Standard score	289 (100.00)	52 (42, 65)
No dysphoria	115 (39.79)	41 (35, 43)
Mild dysphoria	73 (25.26)	53 (51, 56)
Moderate dysphoria	54 (18.69)	65 (62, 66)
Severe dysphoria	47 (16.26)	77 (74, 86)

Table 4 Despondency scores and levels in patients undergoing Maintenance Hemodialysis

	Number, <i>n</i> (%)	Score (points)
Standard score	289 (100.00)	55 (45, 67)
No despondency	132 (45.67)	43 (37, 48)
Mild despondency	63 (21.80)	57 (56, 61)
Moderate despondency	44 (15.23)	67 (64, 70.5)
Severe despondency	50 (17.30)	81 (77, 87)

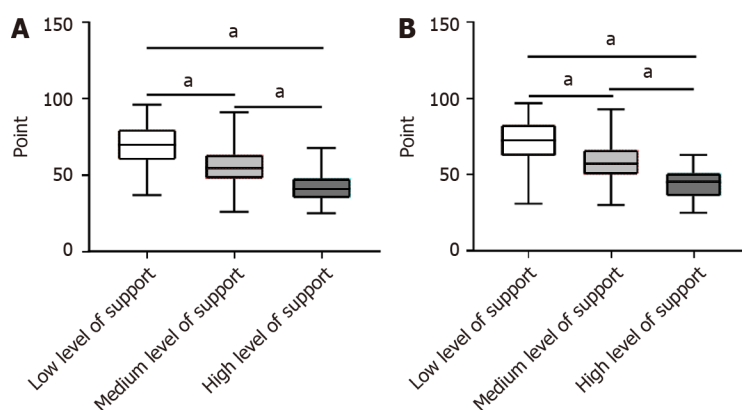


Figure 1 Analysis in patients undergoing Maintenance Hemodialysis with different levels of social support. A: Analysis of Self-rating anxiety scale scores in patients undergoing Maintenance Hemodialysis (MHD) with different levels of social support; B: Analysis of Self-rating depression scale scores in patients undergoing MHD with different levels of social support. Note: ^a*P* < 0.05.

Table 5 Quality of life scores of patients undergoing Maintenance Hemodialysis

	Score (points)
PF	55 (25, 80)
RP	50 (25, 75)
BP	62.5 (46, 87.5)
GH	62 (40, 82)
VT	60 (40, 80)
SF	64 (44, 84)
RE	66.67 (44.44, 88.89)
MH	66.67 (0, 100)
Quality of life (PCS)	105.11 (80.70, 126.64)
Quality of life (MCS)	111.64 (84.74, 130.18)

PF: Physical functioning; RP: Role physical; BP: Bodily pain; GH: General health; VT: Vitality; SF: Social functioning; RE: Role emotional; MH: Mental health; PCS: Physical component summary; MCS: Mental component summary.

Table 6 Analysis of differences in quality-of-life scores of patients undergoing Maintenance Hemodialysis with different levels of social support

	Low level of support	Medium level of support	High level of support	H	P value
Physical functioning	10 (5, 20)	50 (30, 70)	85 (73.75, 91.25)	169.696	< 0.001
Role physical	0 (0, 25)	50 (25, 75)	75 (75, 100)	135.561	< 0.001
Bodily pain	49.5 (33.5, 58.5)	58.5 (37.5, 69.5)	94 (81.5, 100)	109.892	< 0.001
General health	25 (20, 35)	57 (45, 67)	87 (75, 92)	180.510	< 0.001
Vitality	30 (20, 40)	57.5 (46.25, 70)	85 (73.75, 91.25)	164.913	< 0.001
Mental health	32 (20, 40)	64 (52, 76)	92 (76, 96)	170.850	< 0.001
Social functioning	22.22 (11.11, 22.22)	55.56 (44.44, 75)	88.89 (77.78, 100)	173.945	< 0.001
Role emotional	0 (0, 33.33)	66.67 (0, 100)	66.67 (66.67, 100)	57.644	< 0.001
Quality of life (PCS)	73.17 (60.73, 73.17)	99.04 (83.29, 113.28)	129.76 (121.32, 140.17)	177.620	< 0.001
Quality of life (MCS)	73.72 (64.62, 87.28)	106.86 (88.02, 127.40)	129.16 (116, 138.81)	115.293	< 0.001

PCS: Physical component summary; MCS: Mental component summary.

established involving both despondency and social support as independent variables and PCS and MCS as dependent variables. The findings indicated that despondency had a negative predictive effect on PCS and MCS ($\beta = -0.896$, $\beta = -0.717$, $P < 0.05$). Additionally, despondency negatively predicted social support ($\beta = -0.412$, $P < 0.05$). Importantly, the influence of despondency on PCS and MCS decreased when considering the presence of social support (β of PCS from -0.896 to -0.372 , β of MCS from -0.717 to -0.232 , $P < 0.05$). This implies that social support played a partial mediating role in the relationship between despondency and QOL (PCS and MCS) in patients undergoing MHD (Table 9).

Mediating effect of social support on dysphoria, despondency, and QOL

To further assess the mediating effect of social support on dysphoria, despondency, and QOL in patients undergoing MHD, a bootstrap method was employed. The bootstrap 95%CI was analyzed but did not include 0.

Dysphoria: The direct effects of dysphoria on PCS and MCS were statistically significant ($P < 0.05$), accounting for 30.61% and 40.10% of the total effect value, respectively. The mediating effect of social support on dysphoria, PCS, and MCS was significant ($P < 0.05$), accounting for 69.39% and 59.90% of the total effect value, respectively.

Despondency: The direct effects of despondency on PCS and MCS were statistically significant ($P < 0.05$), accounting for 41.52% and 32.36% of the total effect value, respectively. The mediating effect of social support on despondency, PCS, and MCS was significant ($P < 0.05$), accounting for 50.48% and 67.64% of the total effect value, respectively (Table 10 and

Table 7 Correlation analysis of social support, dysphoria, despondency, and quality of life in patients undergoing Maintenance Hemodialysis

	Social support	Dysphoria	Despondency	Quality of life (PCS)	Quality of life (MCS)
Social support	1.000				
Dysphoria	-0.584 ^b	1.000			
Despondency	-0.549 ^b	0.435 ^b	1.000		
Quality of life (PCS)	0.718 ^b	-0.502 ^b	-0.540 ^b	1.000	
Quality of life (MCS)	0.600 ^b	-0.454 ^b	-0.404 ^b	0.206 ^b	1.000

^b*P* < 0.01 (two-tailed).

PCS: Physical component summary; MCS: Mental component summary.

Table 8 The effect of dysphoria on quality of life and the mediating effect of social support

Model path	Standard regression equation	β	SE	<i>t</i>	<i>P</i> value
Step 1	$Y_1 = -0.869A$	-0.869	0.087	-9.963	< 0.001
Step 2	$M = -0.450A$	-0.450	0.038	-11.998	< 0.001
Step 3	$Y_1 = -0.267A + 1.340M$	-0.267	0.088	-3.046	0.003
		1.340	0.113	11.902	< 0.001
Step 1	$Y_2 = -0.823A$	-0.823	0.090	-9.190	< 0.001
Step 2	$M = -0.450A$	-0.450	0.038	-11.998	< 0.001
Step 3	$Y_2 = -0.329A + 1.098M$	-0.329	0.098	-3.371	< 0.001
		1.098	0.126	8.752	< 0.001

Note: Y_1 = Quality of life (physical component summary), Y_2 = Quality of life (mental component summary), M = Social support, and A = Dysphoria.**Table 9 The effect of despondency on quality of life and the mediating effect of social support**

Model path	Standard regression equation	β	SE	<i>t</i>	<i>P</i> value
Step 1	$Y_1 = -0.896B$	-0.896	0.084	-10.709	< 0.001
Step 2	$M = -0.412B$	-0.412	0.038	-10.891	< 0.001
Step 3	$Y_1 = -0.372B + 1.274M$	-0.372	0.082	-4.564	< 0.001
		1.274	0.107	11.888	< 0.001
Step 1	$Y_2 = -0.717B$	-0.717	0.090	-7.945	< 0.001
Step 2	$M = -0.412B$	-0.412	0.038	-10.891	< 0.001
Step 3	$Y_2 = -0.232B + 1.178M$	-0.232	0.093	-2.483	0.014
		1.178	0.123	9.590	< 0.001

Note: Y_1 = Quality of life (physical component summary); Y_2 = Quality of life (mental component summary); M = Social support; B = Despondency.

Figure 2).

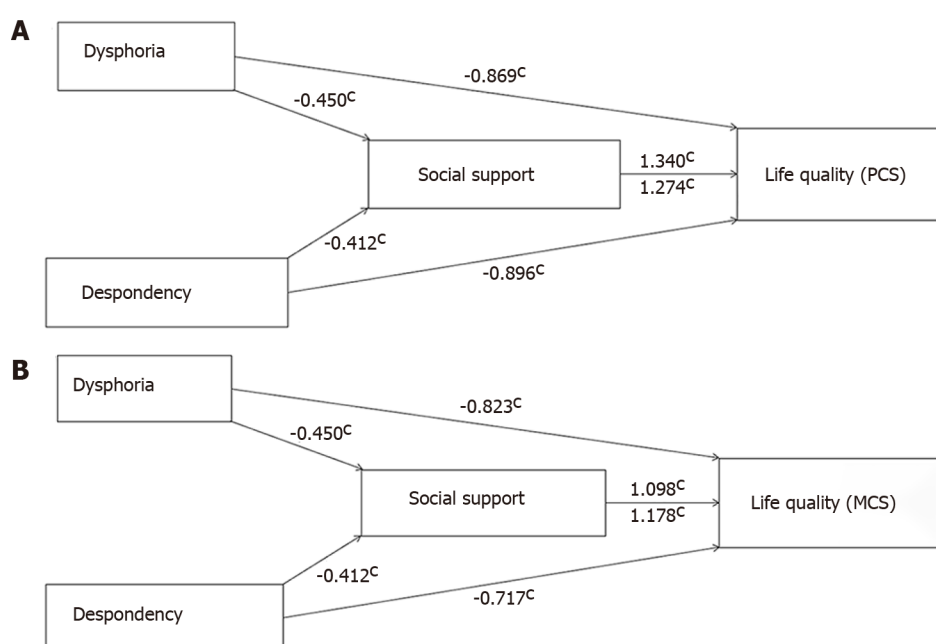
DISCUSSION

The buffer effect model of social support posits that when individuals encounter stressors, social support can mitigate the negative impact of these stressors on individuals[17]. In the context of long-term hemodialysis treatment, as time progresses and the disease advances, patients often experience significant psychological and financial burdens, leading to

Table 10 Results of the mediation effect test

	The path		Coeff	SE	LLCI	ULCI	Relative effect Size (%)
Dysphoria	Direct effect	Dysphoria → Quality of life (PCS)	-0.266	0.088	-0.439	-0.094	30.61
	Indirect effect	Dysphoria → Social support → Quality of life (PCS)	-0.603	0.064	-0.731	-0.482	69.39
	Total effect		-0.869	0.087	-1.041	-0.698	
Dysphoria	Direct effect	Dysphoria → Quality of life (MCS)	-0.330	0.098	-0.521	-0.137	40.10
	Indirect effect	Dysphoria → Social support → Quality of life (MCS)	-0.493	0.071	-0.644	-0.366	59.90
	Total effect		-0.823	0.090	-0.999	-0.647	
Despondency	Direct effect	Despondency → Quality of life (PCS)	-0.372	0.082	-0.533	-0.212	41.52
	Indirect effect	Despondency → Social support → Quality of life (PCS)	-0.524	0.063	-0.659	-0.412	50.48
	Total effect		-0.896	0.084	-1.061	-0.732	
Despondency	Direct effect	Despondency → Quality of life (MCS)	-0.232	0.093	-0.416	-0.048	32.36
	Indirect effect	Despondency → Social support → Quality of life (MCS)	-0.485	0.065	-0.620	-0.367	67.64
	Total effect		-0.717	0.090	-0.894	-0.539	

LLCI: Lower limit of 95%CI; ULCI: Upper limit of 95%CI; PCS: Physical component summary; MCS: Mental component summary.



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Figure 2 Mediating effect model. A: Mediating effect model of physical component summary; B: Mediating effect model of mental component summary. Note: c $P < 0.001$. PCS: Physical component summary; MCS: Mental component summary.

feelings of despondency and dysphoria. These emotional struggles can have a profound impact on the patient's QOL for patients[18]. This study focused on patients undergoing MHD at our hospital's blood dialysis center using a questionnaire-based investigation. We aimed to explore the relationship among social support, dysphoria, despondency, and QOL in these patients. Through correlation analysis, we constructed a mediating effect model to delve deeper into the role of social support in mediating the effects of dysphoria and despondency on QOL in patients undergoing MHD. Our findings provide valuable insights into targeted interventions to improve the QOL of these patients.

The results of this study revealed the following: (1) Among the 289 patients undergoing MHD included in the study, the incidences of dysphoria and despondency were 60.21% and 54.33%, respectively. Comparatively, Ye *et al*[19] reported an incidence rate of 36.89% for dysphoria (68.93% for despondency), whereas Meng *et al*[20] reported an incidence rate of 25.9% for dysphoria (55.1% for despondency). These variations in research results may be attributed to differences in the assessment scales used for patients undergoing MHD, regional economic development, educational level, living environment, and sample size. However, dysphoria and despondency are prevalent in patients undergoing MHD; (2)

This study found a positive correlation between social support and QOL. Higher levels of social support were associated with a better QOL, which is consistent with the findings of Alexopoulou *et al*[21]. Social support encompasses the assistance provided by various social relationships. The psychological well-being of patients undergoing MHD is often influenced by the support they receive from their families and social environments. Social support plays a crucial role in helping patients effectively cope with various pressures and challenges[22]. Medical staff should pay close attention to the social support levels of patients undergoing MHD and collaborate with their families to provide assistance and support tailored to their individual needs, ultimately enhancing the quality of patients undergoing MHD; (3) This study found positive correlations between dysphoria and despondency and negative correlations between dysphoria, despondency, social support, and QOL. These findings are consistent with those reported by Al-Nashri and Almutary [23], Hoang *et al*[24], and Ma *et al*[1]. Our findings indicated that deeper dysphoria was associated with deeper despondency. Furthermore, increased levels of dysphoria and despondency are linked to lower levels of social support and diminished QOL. This relationship can be partially explained by the social isolation that may result from hemodialysis, which requires patients undergoing MHD to spend extended periods (3-4 h) in dialysis rooms at least twice a week. Psychological challenges, particularly dysphoria and despondency, often go unnoticed and can gradually affect physical and MH. Moreover, long-term dysphoria and despondency can lead to reduced social engagement and overall life satisfaction, negatively impacting quality[25]. To address this issue, medical staff should recognize that low social support may contribute to dysphoria and despondency in patients undergoing MHD. Intervention strategies can be developed to strengthen these patients' social networks, encourage them to express their feelings, and address their psychological needs, thereby helping them cope with the emotional burden of their condition; and (4) This study revealed that social support mediated the relationship between dysphoria, despondency, and QOL. With increased social support, the adverse effects of dysphoria and despondency on QOL were mitigated, consistent with the findings of Shang *et al*[26] and Shukri *et al*[27]. Dysphoria and despondency not only directly influence the QOL of patients undergoing MHD but also indirectly affect it by shaping their level of social support. This implies that enhancing social support levels can improve the QOL of patients undergoing MHD who experience dysphoria and despondency. This improvement may be attributed to the encouragement and strength that patients on MHD derive from various forms of social support, thereby enabling them to cope better with life challenges and significantly enhancing their MH and overall QOL[28]. In clinical practice, it is advisable to develop tailored, individualized psychological intervention measures aimed at improving social support levels, boosting the confidence of patients undergoing MHD in managing their condition, and ultimately working toward the goal of enhancing their overall QOL.

This study had some limitations: (1) This study employed a cross-sectional design, and the participants were exclusively patients undergoing MHD at our hospital's hemodialysis center. This single-source sample with a relatively small size could potentially limit the generalizability of the findings. Future research should consider conducting multicenter studies to enhance the representativeness of the results[29]; and (2) The research outcomes were based solely on data from patients in our hospital, which may not fully capture the experiences of all patients undergoing MHD in the broader region. To gain a more comprehensive understanding, future research should incorporate longitudinal studies that track the dynamics of social support, dysphoria, despondency, and life patients undergoing MHD.

CONCLUSION

This study revealed that dysphoria and despondency had a direct negative impact on the QOL of patients undergoing MHD. Additionally, social support plays a mediating role in the relationship between dysphoria, despondency, and QOL among patients undergoing MHD. Thus, enhancing the level of social support provided to patients on MHD can help mitigate the occurrence of dysphoria and despondency, ultimately leading to an improved QOL for these patients. These findings provide valuable insights for clinical staff and offer a theoretical basis for the implementation of targeted treatment and nursing care for patients undergoing MHD.

ARTICLE HIGHLIGHTS

Research background

Patients undergoing Maintenance Hemodialysis (MHD) frequently experience dysphoria and despondency during extended dialysis treatment. These psychological difficulties can lead to alterations in daily routines, a decline in physical capabilities, a loss of social roles and status, and a profound influence on physical and mental well-being, along with overall quality of life (QOL). Consequently, enhancing their QOL is of the utmost importance.

Research motivation

Dysphoria and despondency can significantly diminish the QOL of patients undergoing MHD, whereas strong social support can enhance it. This study investigated the role of social support as a mediator between dysphoria, despondency, and QOL in patients undergoing MHD. This study aimed to establish a theoretical foundation for psychological interventions among patients undergoing MHD, enabling the implementation of effective strategies to boost social support levels and enhance their overall QOL.

Research objectives

The primary objective of this study was to investigate the influence of social support on dysphoria, despondency, and QOL in patients undergoing MHD. Additionally, it aimed to assess the mediating role of social support by constructing a mediating effect model that incorporated social support, dysphoria, despondency, and QOL. The ultimate goal was to enhance the level of social support for patients undergoing MHD, thereby mitigating the effects of dysphoria and despondency and ultimately improving their overall QOL.

Research methods

This cross-sectional study included 289 patients from our hospital. The Social support rating scale, Self-rating anxiety scale, Self-rating depression scale, and Life quality scale were used to collect data. Correlation analysis was used to examine the associations between social support, dysphoria, despondency, and the QOL in patients undergoing MHD. Furthermore, the bootstrap method was employed to assess the mediating effect of social support on the relationships among dysphoria, despondency, and QOL in these patients.

Research results

The study revealed several key findings: (1) Social support was positively correlated with QOL and negatively correlated with dysphoria and despondency; (2) Dysphoria and despondency had a negative impact on the QOL of patients undergoing maintenance hemodialysis; (3) The negative impact of dysphoria and despondency on QOL decreased in the presence of social support; and (4) Social support played a significant mediating role in the relationship between dysphoria, despondency, and QOL. These findings provide valuable insights for healthcare professionals and offer a basis for the targeted treatment and improved care of patients undergoing MHD.

Research conclusions

This study demonstrated that social support plays a mediating role in the relationship between dysphoria, despondency, and QOL in patients undergoing MHD. This study addressed the gap in the understanding of how social support influences the interplay between dysphoria, despondency, and QOL in patients undergoing MHD, providing a valuable theoretical foundation for future studies in this area.

Research perspectives

Future research in this area should consider expanding the sample size and incorporating multi-regional samples to gain a more comprehensive understanding of the relationships among social support, dysphoria, despondency, and QOL in patients undergoing MHD. Additionally, longitudinal studies could provide valuable insights into the evolution of these factors over time in patients undergoing MHD.

FOOTNOTES

Author contributions: Zhou X designed and performed the research and wrote the paper; Zhou YP designed the research and supervised the report; Wang XY and Hong J designed the research and contributed to the analysis; Ren HY and Tian XF designed the research and provided clinical advice; Zhang QQ designed the research and supervised the report; All authors approved the final manuscript.

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Country/Territory of origin: China

ORCID number: Xiang Zhou 0000-0003-3789-5875; Hong Jiang 0009-0006-6698-100X; Yi-Peng Zhou 0009-0005-0796-9775; Xiao-Yu Wang 0009-0004-2320-2761; Hai-Yan Ren 0009-0001-3870-9168; Xue-Fei Tian 0000-0003-4235-0896; Qing-Qing Zhang 0009-0002-1933-4513.

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