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# The association of compassionate care and coping with disease among patients undergoing hemodialysis

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## Abstract

**Background** Compassionate care is one of the concepts that is important to the care of patients with chronic diseases, especially for patients undergoing hemodialysis who deal with all kinds of problems and sufferings. This study aimed to measure the level of compassionate care from the perspective of hemodialysis patients and to assess the relationship between compassionate care and coping with the disease.

**Methods** This cross-sectional study was conducted on 240 patients undergoing hemodialysis in two hemodialysis centers. The participants were selected by random sampling method. Data were collected by the Schwartz Center Compassionate Care Scale (SCCCS) and the Brief COPE scale. The collected data were analyzed using SPSS (version 26) software using ANOVA, t test, and Pearson's correlation coefficient.

**Results** The mean score of compassionate care from the perspective of patients on hemodialysis was  $101.20 \pm 17.47$  out of 120. Among coping strategies, problem-focused strategies which are considered efficient were used more than other emotional-focused and avoidance coping strategies. Moreover, there was a significant and positive relationship of compassionate care with problem-focused and emotional-focused strategies ( $p < 0.05$ ).

**Conclusion** According to the results, providing compassionate care for patients on hemodialysis could help them to cope with their disease. Moreover, the results showed that providing compassionate care is associated with positive coping strategies. Therefore, it is suggested for healthcare working in the hemodialysis units provide high-quality compassionate care and help the patients and their families to cope with their chronic diseases.

**Keywords** Chronic kidney disease, Hemodialysis, Compassionate care, Coping strategies, Adaptation

## Introduction

Chronic kidney disease (CKD) is a progressive disease with a high prevalence that imposes a huge financial burden on healthcare systems. Moreover, it is considered a globally important public and medical problem [1]. The prevalence of CKD and the number of hemodialysis patients are increasing worldwide [2]. The number of people who undergo kidney replacement therapies (KRTs) is estimated more than 2.5 million in the world. It is predicted that this number will be doubled by 2030 [3].

Considering the 5.6% annual growth of this disease in Iran compared to 1.1% growth of the country's

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population, this disease is considered one of the most important health problems in our country [4]. In previous studies, the prevalence of CKD among the Iranian population has been reported as 15.4% [5, 6].

Kidney replacement therapies for patients with end-stage kidney disease (ESKD) include hemodialysis (HD), peritoneal dialysis (PD), and kidney transplantation (KT) [7]. Among these treatments, HD is the most common form of KRT in Iran and the world [8, 9]. Even though hemodialysis increases the life expectancy and quality of life of patients with ESKD, this treatment leads to a decrease in their physical, psychological, social, and emotional well-being. Additionally, the continuation of hemodialysis can lead to problems such as anxiety, depression, despair, denial, and non-adherence to dialysis treatment [10]. In addition, patients on hemodialysis face many stressful challenges such as dietary restrictions, drug treatments and side effects, and psychological problems [11]. All of these challenges cause suffering and discomfort in these patients. Therefore, suffering is one of the common complications in hemodialysis patients that affects the quality of life of patients and their adherence to treatment [12].

Nurses, in comparison with other healthcare providers, have the most interaction with patients and spend more time with them. Therefore, when patients complain of pain and suffering, the nurses are usually available to them, and they could relieve their suffering. Healthcare providers' response to the suffering of patients on hemodialysis and providing care with compassion and respect are considered very important [13, 14].

Compassionate care is one of the concepts that are important for providing high-quality care for patients with chronic disease, especially patients with CKD who undergo hemodialysis. These patients deal with different kinds of suffering and pain [15]. Compassion is widely acknowledged as a main principle of ethics for healthcare professionals [16] and is identified as an essential element of providing high-quality care [17]. Compassionate nursing care is a process in which a nurse communicates with the patient in trusting interaction and by putting himself/herself in the position of the patient tries to understand and solve the patient's concerns [13].

Today, paying attention to compassionate care has become a global interest among healthcare providers [18]. In the field of nursing, the importance of this type of care has been emphasized more [19]. However, compassion is mentioned as the lost art of nurses in some clinical settings [20]. According to the evidence, providing compassionate care for patients with ESKD could have positive effects on the mental and

psychological aspects of the patient and could improve the suffering of patients, which is known as the main goal of person centered care [21].

Although all kidney replacement therapies are considered a source of stress, hemodialysis causes the highest level of stress and the patients experience some physical and psycho-social problems [22]. The changes that take place in the living process of these patients make it difficult to adapt to the disease and the lack of adaptation may lead them to non-adherence to treatment, diet, and fluid intake, which ultimately affects the patient's outcomes [23].

Coping is a psychological tendency to cope with life's challenges and a dynamic flow that refers to a person's response to environmental factors and the changes that occur around it [24]. In general, adaptation has been defined as the ability to compromise, cooperate, and cope with oneself, the environment, and others [25].

Patients undergoing hemodialysis should control their stressors so that they can adapt and cope with different aspects of the disease. Identifying adaptation strategies used in these patients provides valuable information for developing person centered care plans and improving the quality of nursing practices [26]. Moreover, identifying the factors that increase the adaptation of these patients can be effective in the acceptance of disease and improvement of self-care [27, 28]. On the other hand, identifying stressors and coping strategies in patients with ESKD will help nurses and healthcare providers to have a better understanding of the condition of these patients and, as a result, they can design and implement a more effective care plan [29].

It seems that one of the strategies that may be effective in improving the adaptation of patients undergoing hemodialysis is receiving compassionate care from the healthcare providers, especially the nurses working in the hemodialysis units. According to the literature review, compassionate care has different consequences for patients and nurses. One of its positive consequences is the improvement of the mental and emotional status of the patients [18]. Since hemodialysis nurses have the most interaction with patients undergoing hemodialysis, their behavior and interactions can affect the physical and mental performance of the patients. Although compassionate care in chronic diseases is highly valued, there is limited study in the field of compassionate care in patients undergoing hemodialysis. This study aimed to measure the level of compassionate care from the perspective of hemodialysis patients and to assess the relationship between compassionate care and coping with the disease.

## Methods

### Design

This cross-sectional study was conducted on 240 patients undergoing hemodialysis referred to two Dialysis Centers (Sina and Imam Reza Hospitals) affiliated with Tabriz University of Medical Sciences, Tabriz. All methods were performed in accordance with the relevant guidelines for cross-sectional studies and Survey Studies (CROSS) as highlighted by Enhancing the QUALity and Transparency Of health Research network (Equator network).

### Sample and setting

A total of 490 patients undergo hemodialysis in two hemodialysis centers affiliated to Tabriz University of medical sciences, Tabriz, Iran. Krejcie & Morgan's table [30] was used to estimate the sample size of the research [31]. Based on the population size (490 patients), 220 patients were estimated as a sample size. By considering the attrition rate, a total of 245 hemodialysis patients were selected by random sampling method. Five patients refused to participate in the study. Therefore, a total of 240 patients participated in the study. Since 80% of patients were undergoing hemodialysis in Emam Reza Dialysis Center, therefore 80% of participants ( $n=196$ ) were selected from this center. The other, 20% were selected from the Sina dialysis center, where 20% of patients (98 patients) undergo HD in this unit (Fig. 1).

Inclusion criteria included age over 18 years, patients undergoing hemodialysis for at least 6 months, and the absence of acute physical and mental problems in the patient. Patients with acute kidney injury undergoing

hemodialysis and patients with dementia were excluded from the study.

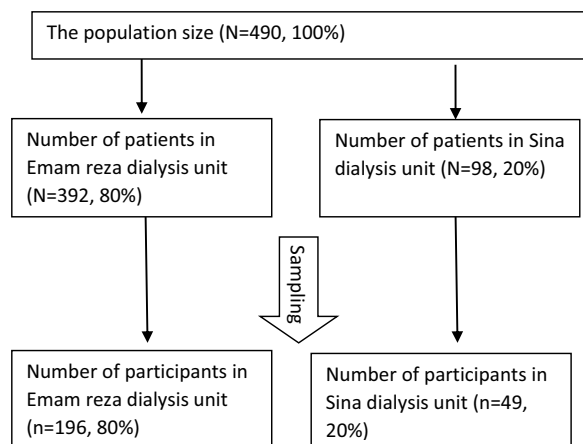
For patients with illiterate or with low literacy, a researcher read the questions and explained more about the question and asked them to select their own choices.

### Data collection

Data collection occurred between April and June 2022. This survey was conducted anonymously. Data were collected by a person who was not a medical professional. Data collection was done using two questionnaires. Schwartz Center Compassionate Care Scale (SCCCS) was used to assess the patient's understanding of compassionate care provided by nurses in the hemodialysis unit. This scale was presented by a group of healthcare providers at Schwartz Center in 1998. The short form of SCCC (12 items) was used in this study [32]. The scale examines three main areas of compassion including diagnosis of suffering, taking action to reduce suffering, and relief of suffering. Patients answer each item on a 10-point Likert scale (from score 1: Not at all successful to Score 10: Very successful). The lowest score on the scale is 12, which indicates the lowest level of compassionate care from the patients' point of view. The highest score is 120, which indicates the highest level of compassionate care [33].

The validity and reliability of this scale have been examined in previous studies. The content validity index of this scale is reported to be higher than 0.70, and the overall reliability of this scale is 0.88. These values indicate an acceptable level of validity and reliability [34].

The second scale used for data collection is the Brief COPE scale. The scale assesses the patients' coping with the disease. The initial version of COPE was designed by Scheier and Weintraub in 1989 [35]. Carver developed the short form of the COPE scale in 1997. We used the short form of COPE scale in this study. This scale consists of 14 subscales with 28 items, and there are two items for each subscale. These areas include self-distraction (items 1 and 19), active coping (items 2 and 7), denial (items 3 and 8), substance abuse (items 4 and 11), use of emotional support (items 5 and 15), use of instrumental support (items 10 and 23), behavioral disengagement (items 6 and 16), venting (items 9 and 21), positive reframing (items 12 and 17), planning (items 25 and 14), humor (items 18 and 28), acceptance (items 20 and 24), religion (items 22 and 27), and self-blame (items 13 and 26). Patients rate each of the items on a 4-point Likert scale, where score 1 indicates "I have not been doing this at all," score 2 "I have been doing this a little bit," score 3 "I have been doing this a medium amount" and score 4 indicates "I have done this a lot." A higher score indicates a higher frequency of using coping strategies. The average score in each strategy ranged between 1 and 4. The



**Fig 1** The flow chart of the study

validity and reliability of this scale have been examined in previous studies so that all 28 areas of this scale had a validity higher than 0.70, and the validity of these items was reported between 0.80 and 0.94. Its reliability using Cronbach's alpha coefficient was 0.77 for the total scale and between 0.70 and 0.91 for the subscales, which is an acceptable value [36]. In this study, the validity and reliability of the Persian version of both scales were assessed by examining linguistic and cultural conformity. For this purpose, after forward and back-translation of the questionnaire by an expert in the field of the English language, the questionnaire was given to ten professors of Tabriz Nursing and Midwifery College, and they expressed their opinions about the level of linguistic and cultural adaptation of this scale. After collecting opinions and making the necessary changes, the questionnaire was completed by 30 patients undergoing hemodialysis. The internal consistency was checked using Cronbach's alpha coefficient of 0.78 and 0.94 for Schwartz Center Compassionate Care Scale and Brief COPE scale, respectively.

#### Data analysis

The collected data were analyzed using SPSS (version 26) software using ANOVA, t test, and Pearson's correlation coefficient. *p* value less than 0.05 was considered significant.

## Results

### Background characteristics of the participants

A total of 240 patients on HD participated in this study. The demographic characteristics of them are shown in Table 1. A mean duration of hemodialysis was  $2.66 \pm 1.57$  years. The results showed no differences between the two institutions in term of compassionate care score and coping strategies. In terms of the etiology, hypertension (42.1%) and diabetes (25.4%) were the most common cause of CKD (Table 2).

### Patients' perception of compassionate care and coping with disease

The results showed that the mean score of compassionate care was  $101.20 \pm 17.47$  out of 120 (Table 3). The results of the study showed that patients undergoing hemodialysis used the problem-focused coping strategies ( $2.66 \pm 0.499$ ) more than two other coping categories of emotional-focused strategies ( $2.36 \pm 0.389$ ) and avoidance coping strategies ( $2.06 \pm 0.395$ ). The mean scores of each domain are shown in detail in Table 4. Among problem-focused coping strategies, hemodialysis patients used the active coping ( $3.12 \pm 0.70$ ) strategy. In terms of emotional-focused strategies, the acceptance strategy ( $3.17 \pm 0.73$ )

was the main strategy used by the participants. Among the avoidance coping strategies, self-blame ( $2.82 \pm 0.68$ ) was used by patients more than other strategies (Table 4).

### Subgroup analysis of compassionate care and coping strategies based on patients' sociodemographic

Further statistical analyses were conducted to assess the socioeconomic factors with compassionate care and coping with disease strategies. The Pearson correlation coefficient showed no association between patients' age and their perception of compassionate care ( $r = -0.03$ ,  $p > 0.05$ ). However, there was a significant negative association between patients' age and the mean score of problem-focused coping strategies ( $r = -0.28$ ,  $p < 0.01$ ). Moreover, a significant positive association was found between patients' age and the mean score of avoidance coping strategies ( $r = 0.15$ ,  $p < 0.05$ ). Meanwhile, there was no association between patients' age and the mean score of emotional-focused strategies ( $p > 0.05$ ).

The subgroup analyses were added to Table 1. The results showed that the mean score of compassionate care and coping strategies showed no statistical differences based on patients' gender and marital status ( $p > 0.05$ ). The mean score of compassionate care and emotional-focused strategies showed no statistical differences based on patients' educational level ( $p > 0.05$ ). However, the mean score of problem-focused strategies and avoidance strategies showed statistical differences based on educational level ( $p < 0.05$ ). In terms of patients' jobs and living areas, only the mean score of problem-focused strategies showed a significant difference ( $p < 0.05$ ). In terms of participants' income, the results showed that patients with higher income had a high score of problem-focused strategies and emotional-focused strategies ( $p < 0.01$ ). Moreover, patients who were undergoing hemodialysis three times a week had a more score in the mean score of problem-focused strategies and emotional-focused strategies as compared to patients on hemodialysis twice a week ( $p < 0.01$ ), but the mean score of compassionate care and avoidance strategies showed no significant differences ( $p > 0.05$ ). More detail on subgroup analysis is shown in Table 1.

### The association of compassionate care and coping with disease strategies

According to the results of the study, there was a significant and positive relationship between compassionate care and problem-focused coping strategies ( $r = 0.20$ ,  $p < 0.01$ ). Also, there was a significant and positive relationship between compassionate care and emotional-focused strategies ( $r = 0.18$ ,  $p < 0.01$ ). On the other hand, there was no significant relationship

**Table 1** Demographic characteristics of patients (N=240)

Variables		N(%)	Total score of compassionate care Mean ± SD	Total score of problem-focused strategies Mean ± SD	Total score of emotional-focused strategies Mean ± SD	Total score of avoidance strategies Mean ± SD
Gender	Male	144 (60%)	101.08 ± 13.51	2.64 ± 0.52	2.33 ± 0.40	2.03 ± 0.41
	Female	96 (40%)	101.09 ± 8.62	2.69 ± 0.46	2.41 ± 0.37	2.11 ± 0.04
			$p > 0.05$	$p > 0.05$	$p > 0.05$	$p > 0.05$
Marital status	Single	6 (2.5%)	105.83 ± 14.27	2.77 ± 0.37	2.33 ± 0.29	2.31 ± 0.23
	Married	211 (87.9%)	108.39 ± 11.81	2.65 ± 0.50	2.35 ± 0.39	2.05 ± 0.39
	Widow	18 (7.5%)	108.67 ± 10.17	2.08 ± 0.31	2.44 ± 0.53	2.00 ± 0.50
	Divorced	5 (2.1%)	110.00 ± 5.29	2.21 ± 0.44	2.86 ± 0.27	2.62 ± 0.43
			$p > 0.05$	$p > 0.05$	$p > 0.05$	$p > 0.05$
Education level	Illiterate	51 (21.3%)	110.88 ± 6.25	2.53 ± 0.43	2.30 ± 0.41	2.23 ± 0.34
	Elementary school	74 (30.8%)	108.09 ± 10.10	2.63 ± 0.46	2.36 ± 0.39	2.05 ± 0.38
	Junior High school	43 (17.9%)	106.77 ± 10.52	2.61 ± 0.55	2.30 ± 0.36	2.00 ± 0.37
	Diploma	48 (20%)	110.17 ± 15.06	2.81 ± 0.53	2.40 ± 0.39	1.92 ± 0.41
	licentiate	18 (7.5%)	104.50 ± 14.89	2.92 ± 0.50	2.56 ± 0.33	2.10 ± 0.45
	Master of Science	6 (2.5%)	101.50 ± 21.48	2.50 ± 0.45	2.37 ± 0.36	2.12 ± 0.38
			$p > 0.05$	$p < 0.05^*$	$p > 0.05$	$p < 0.01^{**}$
Job	Employee	9 (3.8%)	105.67 ± 12.66	2.72 ± 0.59	2.38 ± 0.42	1.81 ± 0.26
	Worker	9 (3.8%)	97.44 ± 16.70	2.36 ± 0.25	2.25 ± 0.33	2.12 ± 0.41
	Housewife	49 (20.4%)	108.80 ± 8.53	2.71 ± 0.44	2.48 ± 0.34	2.07 ± 0.35
	Self-Employment	68 (28.3)	108.34 ± 13.12	2.64 ± 0.44	2.25 ± 0.29	1.03 ± 0.38
	Retired	41 (17.1)	108.07 ± 15.77	2.83 ± 0.56	2.56 ± 0.39	2.00 ± 0.48
	Unemployed	64 (26.7)	110.32 ± 7.23	2.57 ± 0.55	2.27 ± 0.45	2.15 ± 0.37
			$p > 0.05$	$p > 0.05$	$p < 0.05^*$	$p > 0.05$
Resident in	Urban	213 (88.8%)	108.15 ± 12.21	2.67 ± 0.50	2.38 ± 0.38	2.06 ± 0.40
	Rural	27 (11.2%)	110.70 ± 7.48	2.60 ± 0.51	2.21 ± 0.41	2.03 ± 0.32
			$p > 0.05$	$p > 0.05$	$p < 0.05^*$	$p > 0.05$
Income	< 10 million Rials	82 (34.2%)	10.39 ± 11.66	2.59 ± 0.50	2.34 ± 0.38	2.06 ± 0.34
	10–20 million Rials	47 (19.6%)	110.62 ± 5.44	2.57 ± 0.29	2.24 ± 0.29	2.07 ± 0.39
	20–30 million Rials	50 (20.8%)	106.54 ± 9.58	2.56 ± 0.46	2.23 ± 0.33	2.04 ± 0.42
	> 30 million Rials	61 (25.4%)	107.00 ± 16.17	2.91 ± 0.57	2.58 ± 0.42	2.06 ± 0.46
			$p > 0.05$	$p < 0.01^{**}$	$p < 0.01^{**}$	$p > 0.05$
HD time	2 sessions	106 (44.2)	107.47 ± 8.43	2.57 ± 0.42	2.30 ± 0.33	2.03 ± 0.37
	3 sessions	134 (55.8)	109.19 ± 13.86	2.74 ± 0.54	2.41 ± 0.42	2.09 ± 0.42
			$p > 0.05$	$p < 0.01^{**}$	$p < 0.05^*$	$p > 0.05$
Hospital	Hospital A	196 (80)	109.24 ± 12.16	2.70 ± 0.49	2.36 ± 0.40	2.08 ± 0.39
	Hospital B	98 (20)	105.34 ± 9.69	2.53 ± 0.52	2.34 ± 0.34	1.98 ± 0.39
			$p > 0.05$	$p > 0.05$	$p > 0.05$	$p > 0.05$

\*  $p < 0.05$ ; \*\*  $p < 0.01$ 

between compassionate care and the use of avoidance coping strategies ( $p > 0.05$ ). Among the coping strategies, there was a significant relationship between active coping, planning, emotional support, acceptance, self-blame, denial, and self-distraction with compassionate care ( $p < 0.05$ ) (Table 5).

## Discussion

According to the results of our study, hypertension and diabetes were the main causes of chronic kidney disease in more than half of the patients. A review of the literature shows that these two chronic diseases are the most common causes of CKD and supports the results of our study.

**Table 2** Etiology of ESKD in patients undergoing HD

Etiology	N (%)
Hypertension	93 (38.8%)
Diabetes	48 (20.0%)
Diabetes & Hypertension	21 (8.8%)
Glomerulonephritis	12 (5.0%)
Polycystic	13 (5.4%)
Stone	12 (5.0%)
Autoimmune	7 (2.9%)
Multiple myeloma	10 (4.2%)
Trauma	2 (0.8%)
Others	22 (9.2%)
Total	240 (100%)

Compassionate care is very important in CKD patients undergoing hemodialysis who face various pain and suffering [15]. Compassion is a constructive response to the suffering of patients, which improves the self-care of patients [37].

In the present study, the average score of compassionate care was  $101.20 \pm 17.47$  (out of a possible score of 120), which is a high score compared to other studies [32, 33]. This high score indicates that the health care providers, especially nurses working in the hemodialysis units provide a high level of compassionate care. It seems that the long-term care of patients undergoing hemodialysis and the intimate interactions in the hemodialysis units have been effective in the high level of compassionate care. The researchers and data collector tried to report the real status of compassionate care perceived by the patients. The study showed higher compassionate scores in hemodialysis patients than other studies. Since most dialysis patients undergo dialysis twice a week, they are in

close contact with dialysis staffs and patients in the dialysis units establish a therapeutic and caring relationship with dialysis staff; therefore, it seems that they provide more compassionate care due to the nature of the disease. Moreover, all dialysis staffs are Muslim and it seems that this could influence dialysis staff's interactions. As described by Ghafourifard et al. [38] in the compassionate care model, the staff's religious beliefs could encourage them to provide more compassionate care. In addition, the managers of the dialysis units support the provision of compassionate care delivery and encourage the staff to be more compassionate. The literature review supports the importance of managers' support for delivering compassionate care. Moreover, work overload has been reported as the main barrier to compassionate care. However, each nurse in the selected dialysis units provides care for 4 patients. Therefore, they have more time for discovering patients' suffering and providing a caring relationship with patients.

In a study on 167 patients undergoing hemodialysis in a medical center in the USA [32], the mean score of compassionate care was  $87.9 \pm 1.30$  (out of 120 points) which is lower than the average score obtained in our study. In another study conducted on 127 hospitalized patients in Ireland, Lown et al. [33] found that the average score of compassionate care was  $96.37 \pm 21.77$ . This score is similar to the findings of our study.

The existence of tensions and stresses caused by hemodialysis shows the importance of adapting to the disease and using effective coping strategies in these patients [22]. The results of the study showed that among coping strategies, problem-focused strategies are used more than other strategies. Avoidance coping strategies, which are often ineffective, have been used less than the other two strategies. Moreover, most of

**Table 3** Mean score of compassionate care in patients undergoing HD

Nurses:	Mean (SD)
1. Express sensitivity, caring, and compassion for your situation	8.75 (1.47)
2. Strive to understand your emotional needs	8.54 (1.65)
3. Consider the effect of your illness on you, your family, and the people most important to you	7.90 (1.80)
4. Listen attentively to you	8.50 (1.74)
5. Convey information to you in a way that is understandable	8.52 (1.65)
6. Gain your trust	8.53 (1.65)
7. Always involve you in decisions about your treatment	8.48 (1.67)
8. Comfortably discuss sensitive, emotional, or psychological issues	7.78 (1.69)
9. Treat you as a person not a disease	8.57 (1.77)
10. Show respect for you, your family, and those important to you?	8.63 (1.69)
11. Communicate results in a timely and sensitive manner	8.47 (1.65)
12. Spend enough time with you	8.53 (1.75)
Total Score	101.20 (17.47)

**Table 4** Mean score of coping strategies in patients undergoing HD

Variables	Mean (SD)
Active coping	3.13 (0.70)
Use of instrumental support	2.47 (0.84)
Positive reframing	2.06 (0.89)
Planning	2.98 (0.73)
Total (problem-focused)	2.66 (0.50)
Use of emotional support	2.80 (0.69)
Venting	2.42 (0.62)
Humor	1.54 (0.72)
Acceptance	3.18 (0.73)
Religion	2.66 (0.78)
Self-blame	1.56 (0.73)
Total (emotional-focused)	2.36 (0.39)
Self-distraction	2.82 (0.68)
Denial	1.70 (0.82)
Substance abuse	1.92 (0.76)
Behavioral disengagement	1.80 (0.71)
Total (avoidance coping)	2.06 (0.40)

**Table 5** Correlation between coping strategies and compassionate care in patients undergoing HD

Variables	r
Active coping	.350**
Use of instrumental support	.054
Positive reframing	-.087
Planning	.243**
Total (problem-focused)	.196**
Use of emotional support	.293**
Venting	.092
Humor	.071
Acceptance	.358**
Religion	-.025
Self-blame	-.173**
Total (emotional-focused)	.183**
Self-distraction	.203**
Denial	-.160*
Substance abuse	-.120
Behavioral disengagement	-.045
Total (avoidance coping)	-.079

\*  $p < 0.05$ ; \*\*  $p < 0.01$ 

the patients used effective coping strategies more than ineffective coping strategies.

Problem-focused coping means facing and dealing with stressful situations and using conscious efforts based on the problem in order to solve it or change the

stressful situation. Most effective coping strategies such as active adaptation, instrumental support, positive framing, and planning contribute to problem-focused strategies [39].

On the other hand, in emotional-focused coping strategies, the person's reactions are to prevent, reduce, and minimize the stressful situation. And finally, in avoidance coping strategies, the goal is to ignore the situation and the stressor [40]. Therefore, the findings of this study are consistent and confirm the existing knowledge in this field (Table 3).

Among the problem-focused coping strategies, most patients used active and planning coping strategies. However, among the emotional-focused strategies, acceptance and emotional support strategies were used more. Regarding the avoidance coping strategies, the self-blame strategy was used more than other strategies.

In a study done in Saudi Arabia on 100 chronic kidney disease patients undergoing hemodialysis, effective strategies such as active coping, planning, and acceptance were used more than other strategies. Among the ineffective strategies, two strategies of self-distraction and religion were used more. In this study, patients often used effective strategies to adapt to chronic kidney disease [39].

In another study in Malaysia, Ibrahim et al. [41] assessed the coping strategies of 183 patients undergoing hemodialysis and 91 patients on peritoneal dialysis. They found that active coping strategies, planning, and behavioral disengagement strategies were more effective in reducing stress and improvement of adaptation in these patients as compared with other strategies. In contrast, the use of the self-blame strategy which is considered an ineffective strategy increased the patients' stress.

Coping with chronic diseases is a dynamic process and the patient can achieve self-control by increasing the level of physical and cognitive adaptation, which is considered the ultimate goal in the management of chronic diseases [42]. A person who suffering from a chronic disease should deal with personal and environmental challenges to reach an acceptable level of health with a good state of physical, mental, and social functioning and achieve a successful adaptation [43]. Adaptation causes positive changes in people's lifestyles and improves the ability of a person to meet his/her needs [22]. Also, adaptation improves the quality of life of patients and reduces psychological problems [44]. Successful adaptation to chronic disease and its complications including symptoms, treatment, and physical and social changes leads to a positive response to treatments and an improvement of self-concept despite the limitations imposed on the patient [27].

Based on the results of our study, there was a positive significant relationship between compassionate care and problem-focused and emotional-focused coping strategies. Moreover, a significant and positive relationship was found between compassionate care and effective coping strategies. Therefore, the results show that providing compassionate care could improve the coping strategies among CKD patients undergoing hemodialysis.

In line with our study, the literature review shows that providing compassionate care results in positive outcomes such as improvement of patients' hope for recovery, responsibility, and control over their health status [38]. Although no studies were found investigating the association between compassionate care and coping strategies, a recent meta-analysis showed that self-compassion could help in coping with stress and demanding life events.

According to the evidence, lack of compassionate care has been associated with negative outcomes such as increased patient and family complaints, lack of dignity and hope, being overwhelmed, frustration, poor quality care, healthcare costs, being overwhelmed, and adverse medical events [45].

### Limitations

One of the limitations of this study is that it was conducted only on patients undergoing hemodialysis. Therefore, it is suggested to conduct a similar study on other kidney replacement therapies such as peritoneal dialysis and kidney transplantation, and compare the degree of compassionate care and coping with the disease among these three groups. One of the factors that may affect the response of hemodialysis patients is the fatigue of these patients and the reduction of their blood pressure in the final hours of dialysis; therefore, the questionnaires were completed ten minutes after the start of dialysis, and whenever the patients felt tired, the questionnaires were completed in the next sessions. One of the concepts which may influence compassionate care is patient activation. Therefore, it is suggested to study the correlation between patient activation and compassionate care in future studies.

### Conclusion

In conclusion, the results of our study showed that providing compassionate care for patients on hemodialysis could help them to cope with their disease. Moreover, the results showed that providing compassionate care is associated with positive coping strategies. Therefore, it is suggested for healthcare working in the hemodialysis units provide high-quality compassionate care and help the patients and their families to cope with their chronic disease.

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### Author contributions

SN, MG, and AG participated in study conception and design. SN collected the data. Data analysis and drafting of the article were done by SN, MG, and AG. All authors reviewed the manuscript.

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### Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### Declarations

#### Ethics approval and consent to participate

The present study has been approved by the Regional Committee of Medical Ethics of Tabriz University of Medical Sciences (Ethical code: IR.TBZMED.REC.1400.1226). The objectives of the study were provided to all participants and written informed consent was obtained from all subjects or from a parent and/or the legal guardian.

#### Consent for publication

Not applicable.

#### Competing interests

There are no conflicts of interest.

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