



Effect of Metacognitive Therapy and Acceptance and Commitment Therapy on Body Image Concerns of Female Hemodialysis Patients

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Abstract

Background: Concern about body image is one of the important psycho-social issues of hemodialysis women patients, which reduces their quality of life. Identifying the most appropriate treatment is important in providing patients services.

Objectives: The present study was conducted on the effect of metacognitive therapy and acceptance and commitment therapy on the body image concerns of hemodialysis women patients.

Methods: This study was semi-experimental with a pre-test-post-test design and a control group. The population consisted of all hemodialysis patients referred to the hemodialysis department of two hospitals affiliated with the Alborz University of Medical Science. The sample size was 54 people. Non-random sampling was done until the sample size was complete. Then, by simple random sampling, people were divided into three groups of 18 people: Two intervention groups and one control group. Data collection tools were a demographic information form and a body image concern inventory (BICI), completed by interview. To analyze the data, MANCOVA, ANOVA, chi-square, and repeated measurements were used, and they were analyzed by SPSS v-21.

Results: A statistically significant difference was found in the mean scores of total body image concern in the stage before the interventions (metacognitive therapy) and (acceptance and commitment therapy), after the interventions, and three months after the interventions ($P < 0.05$). A statistically significant difference was observed in the mean scores of body image concern in the interventions and control groups in the next phase of the intervention and three months later ($P < 0.05$).

Conclusions: Metacognitive therapy and acceptance and commitment therapy reduced body image concerns in female hemodialysis patients. Therefore, these two interventions are recommended to reduce the body image concerns of female dialysis patients.

Keywords: Women, Hemodialysis, Body Image, Metacognitive Therapy, Acceptance, Commitment Therapy

1. Background

End-stage renal disease (ESRD) is one of the most important health problems that impose a great economic-social burden on the health system (1). End-stage renal disease is costly and debilitating; most patients need hemodialysis to survive (2). In recent decades, the prevalence of this disease increased in Iran, and in 2017, approximately 97 percent of hemodialysis patients were over 30 years old; in the 1990s, approximately 79 percent of hemodialysis patients were over 79 years old (3).

End-stage renal disease and hemodialysis affect the psycho-social aspects of the patient's life (4). Body image is one of the important psycho-social challenges

of hemodialysis patients (5). Body image means people's attitudes, perceptions, and experiences about their bodies and physical appearances (6). Body image disorder refers to negative feelings, thoughts, evaluations, and behavior toward one's body (7). Some researchers reported body image disorders in hemodialysis patients (5, 8). Female patients undergoing hemodialysis are more likely than men to suffer from body image disorders, sexual problems, and low self-esteem (5). Also, their adaptation to body changes differs from men's (9).

Factors such as dependence on hemodialysis, fistula, and shunt on the body, skin, and hair color change due to increased urea, paleness due to anemia due to bone marrow suppression, weight change due to fluid accumulation, bone deformity due to renal

osteodystrophy and changing the shape of walking, body odor of urea, change in the shape of gums and teeth can distort the body image (5, 10). Body image disorder results in a decrease in defective self-confidence, sexual dysfunction, dissatisfaction with life, adjustment disorders, and poor quality of life (5, 9).

Body image is related to metacognition (11). Metacognition is a multifaceted concept that refers to people's beliefs, knowledge, and strategies to regulate and control thinking processes (12). Negative or distorted thoughts originate from the activation of negative beliefs accumulated in long-term memory. They are the basis of the formation of negative concepts about oneself, the future, and the external world. This causes bias in the processing and interpretation of information (13). Negative metacognitive beliefs result in the continuation of negative beliefs, worry, rumination, and inconsistent behaviors (14). Metacognitive therapy is an intervention derived from the third generation of psychotherapy that emphasizes the strategies and processes of monitoring, evaluating, and controlling cognition (15), the result of which is facilitating the change of belief through distancing oneself and evaluating thoughts and beliefs as events, which should be evaluated, rather than accepting them as an image of reality. Metacognitive therapy enables a person to separate himself from the rumination process and leads to thinking about thinking and knowing about knowing (16). Metacognitive therapy has been used for disorders such as depression, anxiety, sexual dysfunction, coping disorder, and body image disorder with favorable results (16-19).

On the other hand, psychologists claim that the three basic problems underlying psychological disorders are problems related to awareness, avoiding inner experiences, and not doing important and valuable activities in life (20). Another third generation of psychotherapy is acceptance and commitment therapy (ACT), which aims to increase the psychological connection of a person with his thoughts and feelings instead of changing cognition. The main goal of ACT is to create psychological flexibility (21) through the ability to live in the moment, pay attention to values, and accept unpleasant experiences (22). ACT's effectiveness in body image disorder in patients with problems such as obesity, anorexia nervosa, polycystic ovary syndrome, and patients undergoing cosmetic surgery and mastectomy is documented (20-23).

Body image has different dimensions, and nowadays, the role of interventions based on multi-disciplinary teams in caring for the body image of patients with chronic diseases is demonstrated (24). Body image concerns are common in female hemodialysis patients, negatively

affecting their quality of life. Both interventions are new third-generation psychotherapy methods but with different approaches. Investigating different treatment methods and introducing more effective treatments to psychotherapists is necessary.

2. Objectives

This study was conducted on the effect of metacognitive therapy and acceptance and commitment therapy on the body image concerns of hemodialysis patients.

3. Methods

3.1. Study Design

This was a semi-experimental study with a pre-test-post-test-follow-up design with a control group from January 19, 2021, to July 21, 2021.

3.2. Participants and Sampling Strategies

The study population was all hemodialysis women patients referred to the hemodialysis department of two hospitals affiliated with Alborz University of Medical Sciences. For experimental research, a sample size of at least twelve people was suggested (25). Considering the 10% sample dropout, 18 people were determined for each group. Non-random sampling was done until the sample size was complete. Then, using a simple random method, the patients were divided into three groups: two intervention groups and one control group. The inclusion criterion was women aged 18 to 70 years with at least six months of history of hemodialysis for at least 2 to 3 times a week for 3 to 4 hours. The exclusion criteria included unwillingness to participate in the study, history of severe stressful events or psychological treatment and taking psychiatric drugs in the last two months, presence of speech, hearing, and dementia problems, suffering from severe mental disorders, the absence of more than two sessions during the study, migration or death of the patient, change of treatment method to peritoneal hemodialysis or renal transplant, and body mass less than 18 and more than 30.

3.3. Data Collection

The data collection tool was the demographic characteristics questionnaire and the body image concern inventory. The body image concern inventory (BICI) is designed by Littleton (26). The BICI consists of 19 items and two subscales of dissatisfaction with appearance [1,3,5,8,9,14,15,16,17,18,19] and social dysfunction due to

concern about appearance [2,4,6,7,10,11,12,13] and examines the total dissatisfaction and concern of a person about his appearance. Each item was scored on a five-point Likert scale from 1 (never) to 5 (always). The minimum possible score was 19, and the maximum was 95. A higher score indicated more concern about body image. A score of 19 to 38 showed low concern about the image of appearance and body, a score of 38 to 57 was an average concern about body image, and a score higher than 57 showed a high concern about body image. In the study of Littleton, the internal consistency of BICI was $\alpha = 0.93$, dissatisfaction with appearance was 0.92, and social dysfunction due to concern about appearance was 0.76 (26). In the study of Pooravari, Cronbach's alpha coefficient of BICI and two subscales were above 0.70 (27). In the present study, the test-retest method was used to determine the reliability of the BICI. The BICI questionnaire was given to 10 hemodialysis patients not included in the study in two stages, ten days apart, and the correlation between the two tests was calculated as $r = 0.79$. The internal consistency of BICI was 0.76, that of dissatisfaction with appearance was 0.71, and social dysfunction due to concern about appearance was 0.70. Questionnaires were completed before, after, and three months after the intervention by interview method.

To measure the weight, the scale in the hemodialysis department was used with an error of 500 grams, and a tape measure was used to measure the height. A body mass index of 18.4 - 24.9 was defined as normal, 25 - 29.9, overweight, and equal to or greater than 30 was obese (Table 1)(28).

This study was single-blind, and the patients did not know which intervention they were receiving. The intervention for the metacognitive therapy group included eight 60-minute training sessions using lectures, question-and-answer methods, and metacognitive therapy techniques. The intervention for the ACT group included eight 90-minute training sessions using the methods of lectures, questions and answers, and ACT techniques (29, 30). The individual intervention sessions were conducted for each participant weekly for eight sessions in a specific private space after the completion of hemodialysis in the hospital.

To avoid the exchange of information between the people of the groups, the meetings were held on separate days. The 3-month follow-up was such that all women undergoing hemodialysis in the intervention group were contacted weekly, and their questions were answered over the telephone while emphasizing the intervention. The follow-up program was carried out to follow the intervention.

After explaining the research objectives and obtaining

written consent, the dialysis units were visited 6 days a week in different shifts at specific times to collect data. The questionnaire was completed through individual interviews before, after, and three months later.

Ethical considerations in this research included obtaining the approval of the [IR.ABZUMS.REC.1399.265](#) ethics committee, obtaining permission from the university and hospitals in the research environment, explaining the research objectives to the participants, obtaining informed written consent before the intervention, and providing an educational pamphlet after completing the research to the control group.

3.4. Data Analysis

Demographic data were described by ANOVA, chi-square, and Fisher's exact test.

Also, to test the hypotheses and compare the dependent variables in the pre-test and post-test, the MANCOVA method and repeated measurements ANOVA were analyzed using SPSS software version 21. A level with a significance value of less than 0.05 was deemed significant.

4. Results

The finding showed that the three groups had no statistically significant difference in terms of body mass index, age, education level, and hemodialysis treatment time ($P > 0.05$) (Table 2).

The results of the ANOVA did not show a statistically significant difference before the intervention between the body image concern score and its subscales in the three groups ($P > 0.05$) (Table 3).

The results of ANCOVA after the intervention showed that the scores of the two subscales of body image concerns and the total scores of body image concerns were significantly different in at least one of the groups ($P < 0.001$). The results of the Bonferroni test showed that the scores in the ACT group ($P < 0.001$) and metacognition ($P < 0.001$) were significantly lower than the control group. No significant difference was observed between the scores of the two intervention treatment groups ($P > 0.05$). Partial eta-Squared was used to evaluate the effect of the intervention, and according to Cohen's classification, the effect size of 0.01 was considered small, 0.06 medium, and 0.14 high. The effect size of body image in the dimension of dissatisfaction with appearance (0.863) was greater than that of body image in social dysfunction due to concern about appearance (0.834), and both were at high levels. Also, the effect size of the body image was equal to 0.871, which was a high level (Table 3).

Table 1. The Content of the Meeting Metacognitive Therapy and Acceptance and Commitment Therapy

Meeting	The Content of the Meetings	
	Metacognitive Therapy (29)	ACT (30)
First session	Establishing a therapeutic relationship, introduction and general explanation of the therapeutic approach, concluding a therapeutic contract, giving information related to resilience and body image and mental refinement (specifying the negative points), overgeneralization (using the word all and nothing), and changing the perspective and correcting the cognitive assessment.	Establishing a therapeutic relationship, introduction and general explanation of the therapeutic approach, concluding a therapeutic contract, psychoeducational discussion about experiences and their evaluation, efficiency as a measurement criterion, creation of creative despair of the therapist, and treatment based on acceptance and commitment prioritizes that the client abandons feeling better and thinking differently.
Second session	Conceptualizing the metacognitive model, examining memory and concentration, practicing attention training techniques, presenting homework, and discussing its importance in treatment.	Investigating patients' problems from the perspective of ACT (extracting the experience of avoidance, the fusion of individual values, and that control is the problem, not the solution). The term creative despair refers to abandoning experiential strategies and instead creating a space to find new strategies. Creative despair refers to abandoning behaviors or strategies the client's experience has shown to be ineffective.
Third session	Examining homework, introducing the technique of tyranny/"must" expression, analyzing the pros and cons of strict criteria, showing the positive points as worthless (expecting negative feedback, rejecting positive feedback), black-and-white thinking, and finding a correct balance, presenting homework	Expressing control as a problem, clarifying the ineffectiveness of controlling negative events using metaphors, introducing desire as another response, engaging in purposeful actions (that is, the general and desirable directions of life that have been set verbally)
Fourth session	Examining members' homework, identifying values (observable behaviors, invisible states), strategies for living with value (identifying positive points), practicing techniques to increase self-esteem, and doing homework.	The use of cognitive distortion techniques (one of the less invasive ways of presenting distortion techniques is introducing thoughts as thoughts or products of the mind; these subtle techniques help to create a context for distortion in therapy and allow the client to more systematically describe his thoughts as the goal is not to get rid of all thoughts, but to get rid of those thoughts that cause problems when they are considered real. Observing oneself as a context (the safe "self" and connections in which events are experienced, but at the same time, it is distinct from those events) weakens the self-concept and self-expression as an observer, showing a separation between the self, inner experiences, and behavior). Continuous non-judgmental contact with psychological and environmental events, as they are.
Fifth session	Reviewing homework, zooming in and out, document style (for the negative event and positive event), presenting homework	Application of mental techniques, patterning of leaving the mind, training to see inner experiences as a process
Sixth session	Reviewing homework, discussing the importance of rumination in the continuation of the disorder and postponing mental rumination and practicing it, practicing the technique of seeking peace and doing breathing exercises, relaxation exercises, withdrawal, and using strategies to break withdrawal and rumination and providing homework	Identifying the patients' life values and measuring them based on their importance in life, showing the dangers of focusing on the results, and discovering the practical values of life.
Seventh session	Presenting a summary of the meetings, drawing hasty conclusions, reading minds, predicting and catastrophizing, examining possible outcomes, and practicing re-evaluating possibilities.	Determining action patterns by values (the step-by-step process of acting to create a complete and integrated life, based on one's deepest desires and wishes, using metaphors), planning for commitment to pursuing values.
Eighth session	Understanding feelings, emotional reasoning, understanding non-verbal cues, examining emotions and practicing identifying them and presenting homework, doing a relapse prevention program (identifying factors that will cause relapse and ways to deal with it)	Summarizing the concepts examined during the sessions, asking patients to explain their achievements from the treatment and their plans for continuing life.

Table 2. Baseline Characteristics of Subjects in the Interventions and Control Groups ^{a, b}

Variable and Categories	Control	ACT	Metacognitive Therapy	Tests (P-Value)
Body mass index ^Y				
Less than 18.5	0 (0)	0 (0)	1 (5.6)	
18.5 - 24.9	15 (83.3)	14 (77.8)	7 (38.9)	
25.29.9	3 (16.7)	4 (22.2)	10 (55.6)	
Total	18 (100)	18 (100)	18 (100)	
Mean ± SD	24.21 ± 1.71	23.45 ± 2.15	24.80 ± 3.10	0.109
Age (y) ^{**}				
< 50	7 (38.9)	8 (44.4)	4 (22.2)	0.588
60 - 50	6 (33.3)	4 (22.2)	8 (44.4)	
> 60	5 (27.8)	6 (33.3)	6 (33.3)	
Total	18 (100)	18 (100)	18 (100)	
Education level				
Illiterate	4 (22.2)	2 (11.1)	4 (22.2)	0.490
Less than a diploma	6 (33.3)	9 (50)	6 (33.3)	
Diploma	4 (22.2)	3 (16.7)	7 (38.9)	
Bachelor's degree	4 (22.2)	4 (22.2)	1 (5.6)	
Total	18 (100)	18 (100)	18 (10)	
Hemodialysis * treatment time (y)				
< 5 years y	12 (66.7)	15 (83.3)	11 (61.1)	0.663
5 - 10 y	5 (27.8)	2 (11.1)	5 (27.8)	
> 10 y	1 (5.6)	1 (5.6)	2 (11.1)	
Total	18 (100)	18 (100)	18 (100)	

^a * Fisher's exact test; ^{**} chi-square; ^Y ANOVA.

^b Values are expressed as Mean ± SD or No. (%).

The results of ANCOVA three months after the intervention showed significant differences between the two body image concerns subscales scores and the total body image concerns score in at least one of the groups ($P < 0.001$). The body image concerns subscales, and the total body image concerns score in the ACT group ($P < 0.001$) and metacognition ($P < 0.001$) were significantly lower than in the control group. No significant difference was observed between the scores of the two intervention treatment groups ($P > 0.05$). Partial eta-Squared was used to evaluate the effect of the intervention, and according to Cohen's classification, the effect size of 0.01 was considered small, 0.06 medium, and 0.14 high. The effect size of body image in the dimension of dissatisfaction with appearance (0.866) was greater than that of body image in social dysfunction due to concern about appearance (0.831), and both were at high levels. Also, the effect size of the total body image concerns was equal to 0.883, which was a high level (Table 3).

The results of the Repeated measures ANOVA showed that in the control group, the total score of body image concern had a significant difference at least once. The results of the Bonferroni test showed that the grades three months after the intervention were significantly lower than before the intervention. No significant differences were observed between scores at other times ($P > 0.05$). Dissatisfaction with appearance had a significant difference at least one time. The results of the Bonferroni test showed that the grades three months after the intervention were significantly lower than before the intervention. No significant difference was observed between scores at other times ($P > 0.05$). However, there was no significant difference in social dysfunction due to appearance concerns in the three investigated times ($P = 0.124$) (Table 4).

In the ACT intervention group, after the intervention and three months later, there was a significant difference in the total body image concern score at least once. The

Table 3. Comparison of Mean Scores of Body Image Concerns in Three Groups ^a

Groups and Body Image	Mean ± SD			Test		Effect Size
	Control	ACT	Metacognitive Therapy	F	P	
Before the intervention						
Dissatisfaction with appearance (11-55)	35.50 ± 5.07	36.77 ± 4.06	38.77 ± 7.38	*1.522	0.228	-
Social dysfunction due to concern about appearance (8 - 40)	27.11 ± 4.56	28.16 ± 3.20	29.33 ± 5.16	1.155	0.323	-
Total score BICI (19 - 95)	62.61 ± 8.93	64.94 ± 6.54	68.11 ± 12.20	*1.515	0.230	
After the intervention						
Dissatisfaction with appearance (11-55)	34.72 ± 5.47	18.11 ± 2.37	18.16 ± 3.29	**157.460	< 0.001	0.863
Social dysfunction due to concern about appearance (8 - 40)	26 ± 4.66	15 ± 2.16	14.16 ± 1.91	**125.309	< 0.001	0.834
Total score BICI (19 - 95)	60.72 ± 9.60	33.11 ± 4.24	32.33 ± 4.56	**169.505	< 0.001	0.871
Three months after the intervention						
Dissatisfaction with appearance (11-55)	33.77 ± 5.20	19.83 ± 2.40	19.61 ± 2.81	**161.003	< 0.001	0.866
Social dysfunction due to concern about appearance (8 - 40)	26.05 ± 4.35	16.88 ± 2.11	16.22 ± 2.28	**123.033	< 0.001	0.831
Total score BICI (19 - 95)	59.83 ± 8.88	36.72 ± 4.08	35.83 ± 4.79	**189.439	< 0.001	0.833

^a * ANOVA; ** MANCOVA**Table 4.** Comparison of Mean Scores of Body Image Concerns in Three Groups Before, After, and Three Months Later Intervention in Hemodialysis Patients

Groups Body Image	M ± SD			Repeated Measures ANOVA	
	Before	After the Intervention	Three Months Later (Follow-up)	F	P
Control					
Dissatisfaction with appearance	35.50 ± 5.07	34.72 ± 5.47	33.77 ± 5.20	5.180	0.011
Social dysfunction due to concern about appearance	27.11 ± 4.56	26 ± 4.66	26.05 ± 4.35	2.223	0.124
Total score BICI	62.61 ± 8.93	60.72 ± 9.60	59.83 ± 8.88	7.784	0.002
ACT					
dissatisfaction with appearance	36.77 ± 4.06	18.11 ± 2.37	19.83 ± 2.40	360.126	< 0.0001
Social dysfunction due to concern about appearance	28.16 ± 3.20	15 ± 2.16	16.88 ± 2.11	227.056	< 0.0001
Total score BICI	64.94 ± 6.54	33.11 ± 4.24	36.72 ± 4.08	438.565	< 0.0001
Metacognitive therapy					
dissatisfaction with appearance	37.77 ± 7.38	18.16 ± 3.29	19.61 ± 2.81	152.358	< 0.0001
Social dysfunction due to concern about appearance	29.33 ± 5.16	14.16 ± 1.91	16.22 ± 2.28	608.552	< 0.0001
Total score BICI	68.11 ± 12.20	32.33 ± 4.56	35.83 ± 4.79	177.620	< 0.0001

Bonferroni test demonstrated that both the total body image concern scores 3 months after the intervention and immediately after the intervention were significantly lower than the scores observed before the intervention. Furthermore, the scores following the intervention were also significantly lower compared to the scores measured three months after the intervention ($P < 0.05$). Dissatisfaction with appearance had a significant difference at least one time. The results of the Bonferroni test showed that the scores three months after the intervention and after the intervention were significantly lower than before the intervention, and the scores after the intervention were significantly lower than three months after the intervention ($P < 0.05$). There was a significant difference in the level of social dysfunction due to concerns about appearance at least once. The results of the Bonferroni test showed that the scores three months after the intervention and also after the intervention were significantly lower than before the intervention, and the scores after the intervention were significantly lower than three months after the intervention ($P < 0.05$) (Table 4).

The results of the Repeated measures ANOVA in Table 4 show that in the group under metacognitive intervention, the total score of body image concern had a significant difference at least once. The results of the Bonferroni test showed that the scores three months after the intervention and after the intervention were significantly lower than before the intervention, and the scores after the intervention were significantly lower than the three months after the intervention ($P < 0.05$). Dissatisfaction with the appearance had a significant difference at least once. The results of the Bonferroni test showed that the scores three months after the intervention and after the intervention were significantly lower than before the intervention, and the scores after the intervention were significantly lower than the three months after the intervention ($P < 0.05$). There was a significant difference in the level of social dysfunction due to concerns about appearance at least once. The results of the Bonferroni test showed that the scores three months after the intervention and after the intervention were significantly lower than before the intervention, and the scores after the intervention were significantly lower than the three months after the intervention ($P < 0.05$).

5. Discussion

The present study was conducted on the effect of metacognitive therapy and ACT on body image concerns in female hemodialysis patients. The findings show that both interventions were effective in reducing body image concerns.

In the present study, metacognitive therapy reduced body image concerns in female hemodialysis patients. This finding was consistent with Azad et al.'s study, which showed that metacognitive therapy reduced the concern about the body image of patients with psoriasis (18). Safari et al.'s study showed that metacognitive therapy regarding body image improved the social adaptation of visually impaired learners (19). Metacognitive beliefs affect body image concerns, and low cognitive self-awareness increases body image concerns (17, 31). Improving cognitive self-awareness through controlling thoughts and beliefs can reduce body image concerns (31). Metacognitive therapy helps patients to become more aware of metacognitive processes through attention and mindfulness training and to avoid worry and rumination as ineffective coping strategies (18). In explaining this finding, it can be said that hemodialysis patients with a reliable understanding of their physical limitations and abilities have fewer body image concerns. Empowering hemodialysis patients in controlling thoughts and mental processes concerning the body, their limitations, and their abilities can create a shield against the influx of negative beliefs and thoughts about the body, reducing body image concerns.

The present study showed that ACT reduced the body image concerns of women patients undergoing hemodialysis. This finding is consistent with the results of Noroozi et al., which showed that ACT significantly increased self-control and flexibility of the body image in obese patients (20). The study by Givehki et al. showed that ACT improved the flexibility of body image and body awareness in patients with psychosomatic disorders (32). The ACT consists of six main processes: Acceptance, cognitive breakdown, connection with the present, self as context, values, and committed action for psychological flexibility (20). It contains a combination of metaphor, paradoxical sentences, attention skills awareness, and a wide range of experiential exercises and behavioral interventions guided by values (23). The ACT aims to enhance a patient's cognitive and psychological awareness of their situation. It does so by enabling them to acquire skills in accepting their thoughts and emotions without attempting to remove them. Additionally, this therapy assists patients in learning how to distinguish their mental experiences from their physical state and the negative beliefs associated with them. The ultimate outcome is a reduction in distress related to their body image, achieved not through direct confrontation but by creating a healthy separation between their mental experiences and their physical self. On the other hand, by clarifying individual values, they can plan feasible behavioral goals and are motivated to commit to achieving them (23, 33).

Based on the results of this study, both metacognitive therapy interventions and ACT can reduce body image concerns. Therefore, it is suggested that metacognitive therapy and ACT should be included in the holistic treatment of hemodialysis patients to prevent and treat body image concerns. The multidimensional nature of body image and its impact on the quality of life of hemodialysis patients indicates the need for integrated care by a multi-disciplinary team inclusive of psychologists and psychotherapists.

One limitation of this study was not generalizing the results to men undergoing hemodialysis. It is suggested that other studies be conducted on both genders and on a multi-center basis.

5.1. Conclusions

Metacognitive therapy and acceptance and commitment therapy reduced body image concerns in female hemodialysis patients. Therefore, based on a holistic and multi-disciplinary approach, these two interventions are recommended to reduce the body image concerns of dialysis patients. It would be advisable to evaluate the effectiveness of third-generation psychotherapy and other interventions based on body image care to identify the best, most comprehensive, and most effective interventions.

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Footnotes

Authors' Contribution: R. T., S. H., and S. Z. M. designed the study. S. H. implemented the study. S. H. and R. T. analyzed and interpreted the data. S. Z. M. wrote the manuscript. All authors participated in reviewing, revising, and approving the manuscript.

Conflict of Interests: Participation in this study was voluntary. There were no charges for participants. The authors did not make any inventions. The authors did not receive royalties for this project. The benefit of doing this research is the development of background knowledge, and there were no product development benefits for authors due to the work. The authors are not members of the editorial board of this journal. The authors declare that they have no known competing financial interests

or personal relationships that could have influenced the work reported in this paper.

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