

Effect of Psycho Education on Depression and Anxiety Symptoms in Patients on Hemodialysis

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Background: Hemodialysis as a solution for patients with chronic renal failure is a stressful process. Anxiety and depression after hemodialysis could have negative impacts on quality of life, treatment and prognosis of the disease. Some studies indicated that educating patients prior to hemodialysis could enhance patients' quality of life and increase the likelihood of their survival.

Objectives: This study investigated psychological impacts of psycho education on anxiety and depression symptoms in patients under dialysis.

Patients and Methods: This was a prospective, experimental intervention study with pretest and post-test. Eligible patients (n = 60) were selected randomly from dialysis center of Imam Khomeini Hospital in Sari in 2009. Hospital Anxiety Depression Scale (HADS) score of patients were eight or greater. They were divided into two matched groups. In one group, patients were given psycho education during three sessions of one-hour, while patients in the control group did not receive any education. HADS was completed for both groups before dialysis and one month after the end of educational sessions. The data were compared and analyzed using paired t-test and Chi-square test.

Results: Psycho education decreased depression score ($P < 0.001$) and the HADS ($P = 0.008$) significantly. These decreases were not significant for anxiety scores of patients ($P = 0.185$).

Conclusion: This research indicated that psycho education based on the designed protocol decreased the scores of depression and total scores of HADS.

Keywords: Anxiety; Depression; Hemodialysis Solutions

1. Background

Physical diseases, especially chronic and debilitating forms have several psychiatric consequences; therefore, outset of psychiatric disorders are common following physical diseases (1-3). Prevalence of chronic renal failure is 242 per one million worldwide and about 8% is added to this rate annually (4). According to recent statistics provided by the Management Center for Transplant and Special Diseases of Iran, number of patients in end stage renal failure is about 25000, of whom more than 50% are treated with hemodialysis (5).

Up to 50% of patients with renal failure, especially dialysis have different types of depression. The prevalence of major depression in these patients is estimated as 5% to 20% (3). Depression after hypertension is the second common disease associated with end-stage renal disease (ESRD) (6). Major risk factors for depression in patients under dialysis include being single, low educational level, low socioeconomic status, hypertension, low albumin,

duration of dialysis, number of dialysis per week and being female gender (7).

Anxiety and depression in patients under dialysis are less diagnosed and the treatment performed is often less than required (3). Several studies revealed that suicidal ideation is higher in patients under dialysis than the general population and life expectancy in these patients is 1.3 to 1.6 of normal individuals (8). Depression in patients with chronic renal disease could result in higher risk of complication and mortality. This phenomenon is independent of factors such as age, race, socioeconomic status, country of residence and other comorbidities (3). Depression reduces the quality of life of such patients and their lifespan (1, 9, 10).

Despite the high prevalence of depression in patients with renal disease, its diagnosis is a difficult task. A large overlap exists between depressive symptoms and signs of uremia, which makes diagnosis of psychiatric disorders

more difficult (1, 11). Symptoms of chronic renal disease, treatment side effects (e.g. weight loss and anorexia due to nausea) and problems such as pain might imitate depressive symptoms and make diagnosis more difficult (3).

Dialysis could be considered as a stressful treatment, which results in different psychologic reactions if the patient is not given any education about dialysis before reaching end-stage renal disease (2).

Cramond et al. described specific grief related to patients with end-stage renal disease (12). Moreover, numerous studies showed that feeling self-control is related with job success, optimal cognitive function and reduction of depression and anxiety in patients with end-stage renal disease (13). Some studies indicated that educating patients prior to dialysis could enhance the rate of their survival (13, 14). Early education pre dialysis potentially increases the efficiency of treatment and enhances the patient's quality of life (14). Besides, it has been reported that predialysis education can postpone initiation of treatment or dialysis by increasing patient's cooperation, better compliance with treatment and slowing the progression of renal failure (14). Offering a specific educational program to reduce anxiety and depression in these patients can assist in moderating and facilitating their problems (14). Despite the high prevalence of renal failure and dialysis in Iran, there is no specific educational program for patients under dialysis both before and during the treatment. Few studies were performed on the impact of psycho education on psychiatric symptoms such as depression and anxiety. In most studies, there is a lack of either control group or matching between the control and treated groups. On the other hand, the impact of psycho education on severity of anxiety in patients under dialysis has not been investigated.

2. Objectives

This study aimed to investigate the impacts of education on psychological symptoms of anxiety and depression in patients under dialysis. This study was approved by the Ethics Committee of Mazandaran University of Medical Sciences.

3. Patients and Methods

This was a prospective, experimental intervention study with pretest and post-test on patients with renal failure being treated with hemodialysis in Imam hospital in Sari whose anxiety or depression score was eight or greater according to HADS. Patients with any of the following conditions were excluded from the study;

1. Experiencing new stressful events during the time of study based on the Holmes-Rahe list of stressful life events
2. Any change in dialysis schedule
3. Starting any other psychiatric treatment during the study

4. A known history of previous psychiatric disorder
5. Having a new stressor during previous six months except for those related to kidney disease
6. Failure to attend in all educational sessions

Eligible patients (n = 60) were selected randomly from dialysis center of Imam Khomeini Hospital in Sari. The patients were divided into two groups by a random allocation after being somewhat matched according to intervening factors such as age, gender, marital status, education level, duration of dialysis and number of dialysis per week. Therefore, there were 30 patients in the dialysis group with psycho education and the rest were in the dialysis group without psycho education (control group). The content of educational sessions were anatomy description, pathophysiology, illustration of causes of renal failure and variety of treatments with advantages and disadvantages of each, education of dialysis mechanism, necessary care for dialysis patients, problem-solving skills, stress management, adaptive response in humans and muscle relaxation.

The treatment group attended three group educational sessions of one-hour, which was held every other day before the dialysis appointment with collaboration of a nephrologist and a psychiatrist.

3.1. Hospital Anxiety and Depression Scale (HADS)

Zigmond et al. developed Hospital Anxiety and Depression Scale (HADS) as a practical self-report tool to determine the severity of anxiety and depression in patients with physical and psychological problems (15). Being short, easy scoring and relative sensitivity to change are among its advantages. It contains 14 questions; seven questions determine depression and the rest determine anxiety. Each question has four choices and the subject could choose one based on his or her feelings. Each of these choices would be assigned a score between zero and three. The total score of either depression or anxiety was between zero and 21. Patients with scores between 11 to 21 are considered clinically disordered. The scores between 8 and 10 are considered borderline or abnormal and scores of zero to seven are considered normal. The questionnaire was translated into Persian and standardized by Montazeri et al. (reliability > 0.70 and validity = 0.78) (16).

HADS questionnaire was completed in both groups before the intervention (by patient and oversight of a psychiatrist). This questionnaire was completed one month later (after the educational sessions) again for both groups. Other information such as age, history and current use of tobacco, drugs, alcohol, history of hypertension, diabetes, heart attack, hypercholesterolemia, underlying cause of kidney failure and history of kidney transplant were recorded separately. This was performed to compare their frequencies, so that their impacts on HADS score could be statistically analyzed. Meanwhile, patients were asked about occurrence of any new stress-

ful events (based on the Holmes list of stressful life events) during the study.

3.2. Statistical Analysis

We applied central tendency and dispersion indices for data description. Independent sample t-test was used to compare the two groups (dialysis patients with education versus control group). Within each group, the scores before and after education were compared using paired t-test. In the case of qualitative variables, we used Chi-square test to compare the two groups. In this study, the level of significance was 0.05. All analyses were performed in SPSS ver.16.

4. Results

Two patients were excluded from the dialysis group with psycho education. This happened due to a change in dialysis schedules. Besides, one patient was excluded from this group because of having a new stressor during the study. Similarly, in control group (the dialysis group without psycho education) two patients were excluded, one due to changes in dialysis schedule and another due to having a new stressor. Therefore, this study was followed by 27 patients in the dialysis group with psycho education and 28 patients in the control group.

The mean age of patients in dialysis group with psycho education was 49.14 ± 14.54 , while it was 52.29 ± 15.58 in control group. Thirteen male and 14 female were in dialysis group with psychoeducation, respectively. In contrast, the same number of male and female (each with 14 patients) were in the control group.

As we made two matched groups, the results showed no significant differences between the two groups according to their age, gender, educational level, marital status, duration of dialysis and number of dialysis per week (In all cases $P > 0.05$). Besides, t-test showed that the scores of pre-tests for depression and anxiety and the total scores of HADS were not significantly different between the two groups ($P > 0.05$).

As shown in Table 1, the mean score of pre-test for depression in dialysis group with psycho education was

10.22 ± 3.40 , while it decreased to 8.33 ± 3.72 after education. The result of paired t-test revealed a significant difference between the scores before and after the intervention ($P < 0.001$). In dialysis group with psycho education, the mean score of pre-test for anxiety was 9.56 ± 3.19 , but after education was 8.78 ± 3.27 . Here the result of paired t-test indicated no significant difference between the scores of before and after the intervention ($P = 0.185$). Besides, in this group we found that total score of HADS was 19.78 ± 5.41 , which decreased to 17.11 ± 6.09 after the education. These means were significantly different in paired t-test ($P = 0.008$).

From the results of HADS questionnaire in control group (the dialysis group without psycho education, Table 1), the mean score of pre-test for depression (10.07 ± 3.39) was not significantly different ($P = 0.857$) with the mean score after one month (10.11 ± 3.39). The same non-significant result ($P = 0.787$) was found between the mean scores of pre-test for anxiety (10.11 ± 3.68) and the score after one month (10.04 ± 3.27). The total score of HADS in control group was 20.18 ± 5.49 , which decreased to 20.14 ± 5.35 after one month. Two means were not significantly different ($P = 0.802$).

The results of HADS questionnaire for male showed that the mean score of pre-test for depression was 9.85 ± 3.06 , which was significantly different from the mean scores after psychoeducation (9 ± 3.65 , $P = 0.028$). In contrast, the mean score of pre-test for anxiety (9.19 ± 3.3) was not significantly different from the score after psychoeducation (8.85 ± 3.61 , $P = 0.043$). The total score of HADS was 19.04 ± 5.18 , which significantly decreased to 17.85 ± 6.54 ($P = 0.043$).

The results of HADS questionnaire for female revealed that the mean score of pre-test for depression (10.43 ± 3.67) was significantly greater than after psychoeducation (9.46 ± 3.68 , $P = 0.039$). The mean score of pre-test for anxiety was 10.46 ± 3.49 and after psychoeducation decreased to 9.96 ± 2.94 . However, this reduction was not significantly different ($P = 0.343$). The same non-significant result was found for total score of HADS, where it was 20.89 ± 5.56 before psychoeducation and 19.43 ± 5.17 after it ($P = 0.081$).

Table 1. Results of HADS Questionnaire^{a, b}

	With Psycho education (n =27)	P Value	Control Group (n =28)	P Value
HADS depression		< 0.001		< 0.857
Pre-test	10.22 ± 3.40		10.07 ± 3.39	
Post-test	8.33 ± 3.72		10.11 ± 3.39	
HADS anxiety		< 0.185		
Pre-test	9.56 ± 3.19		10.11 ± 3.68	< 0.787
Post-test	8.78 ± 3.27		10.04 ± 3.27	
HADS total scores		< 0.008		< 0.802
Pre-test	19.78 ± 5.41		20.18 ± 5.49	
Post-test	17.11 ± 6.09		20.14 ± 5.35	

^a Abbreviations: HADS, hospital anxiety and depression scale.

^b Data are presented as mean ± SD.

5. Discussion

This research indicated that psychoeducation based on the designed protocol within three sessions decreased the scores of depression and HADS. The scores of depression and HADS in men significantly decreased after education, however, in women this just occurred for depression score. Although psychoeducation reduced anxiety, but it was not statistically significant. This might be due to either short-term education or short-term follow-up by patients. On the other hand, skills such as muscle relaxation require continuous exercise and a week may not have been sufficient. Tsay et al. investigated the influence of copying skills education on stressors associated with disease and its association with depression and life quality. It was performed in eight weeks by including a control group. Their study showed that education of copying skills reduced depression in patients (17).

Our results are similar with the results of Lii et al. They studied 60 patients under dialysis and found a significant influence of psychological interventions on depression improvement and life quality (18). They applied the Beck questionnaire, some items of which could be considered as similar symptoms of renal failure and may cause an overestimate of depression. However, in the present study, HADS questionnaire was used to avoid that problem, since it does not consider physical symptoms.

In a research by Cukor et al. performed on 50 patients undergoing dialysis treatment using the Beck questionnaire, the results showed that supportive psychotherapy in a year with monthly meetings decreased the Beck scores for all patients. However, it was not obvious to what extent the reduction was due to psychotherapy or other factors such as spontaneous reflux of the disease as no control group was involved in their study (19); while, we attempted to reduce the possible influence of other factors by including a control group and matching the groups.

Tong et al. reviewed relevant literature regarding supportive treatments and providing information to patients with chronic renal failure and their caregivers. They concluded that there is no reliable evidence on the positive impact of such interventions on physical and mental conditions of patients (20).

Nevertheless, a review study by Rabindranath et al. on psychosocial interventions for depression in dialysis patients indicated that adding psychological interventions to the usual treatment of depression in dialysis patients could reduce their anxiety. The study emphasized the need for further studies, considering standard diagnostic criteria and matching intervening variables (21).

Devins et al. conducted a randomized controlled clinical trial on 297 patients. One group of patients received conventional therapy and the other group received conventional therapy with psychoeducation prior to dialysis. The educational program included a session of 90-minute lecture informing patients about kidney's function,

kidney's diseases, hemodialysis, continuous ambulatory peritoneal dialysis, renal transplantation, dietary and drug treatment regimens, nutrition and lifestyles. Patients were followed every three weeks with 10-minute telephone interviews. Their results showed that those who received education, required dialysis 17 months later, and the control group needed dialysis 14 months later which was a significant difference ($P < 0.0001$) (9).

Baraz et al. studied the impacts of self-care training on quality of life and some laboratory parameters in 32 patients under hemodialysis in the control group and treated group. Quality of life questionnaire was completed before and after education and laboratory parameters were measured two months before and two months after education. They found a significant impact of self-care education on life quality and several laboratory parameters (22). In another study conducted by Wicks et al. insight therapy improved anxiety and depression in dialysis patients (23).

Offering a specific educational program to reduce anxiety and depression in such patients could assist in moderating and facilitating their problems. In fact, understanding and recognition of depression disorder and its treatment is essential for healthcare providers, so that they can provide optimum quality services. Conducting and repeating such low cost studies in other dialysis centers is recommended. We believe that the results from similar studies could be helpful to develop educational packages for these patients. Moreover, comparative studies able to investigate short-term or long-term psychological effects of drugs and psychological interventions are very useful. Limitations in this research were not being able to follow up patients in long-term, lack of non-psychoeducation sessions for control group and small sample size. However, advantages of this study were the use of reliable HADS questionnaire and matching the two groups.

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Authors' Contributions

Mohamad Mehdi Mirzade designed and conducted the study. Hamzeh Hosseini participated in designing and evaluating the study and psychoeducation. Fate-meh Espahbodi participated in psychoeducation. Arefeh Beygom Shafaat participated in designing and drafting the manuscript. All authors read and approved the final manuscript.

Declaration of interest

None Declared.

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