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EFFECT OF THE STRESS INOCULATION PROGRAM ON THE HOPE OF LIFE OF HEMODIALYSIS PATIENTS

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ABSTRACT

Field and Purpose: Dialysis in patients with kidney failure is a stressful process which is followed by numerous social and psychological problems. Therefore, this study aims to investigate the effect of stress inoculation program on the hope of life of hemodialysis patients in the city Iranshahr.

Method and tools: the present study is a quasi-experimental research of a pretest – posttest type with a control group. The statistical population of the research includes all of the hemodialysis patients of the city Iranshahr among whom a sample volume of 60 of the hemodialysis patients were chosen. The tool used in this study is the Miller-May hope for life questionnaire and the data has been statistically analyzed by the SPSS software version 22.

Findings: in this intervention, the difference between the experimental and the control group was not statistically significant in terms of personal characteristics and also the difference between the two groups was not statistically significant in terms of the hope for life scale before the intervention. But after the intervention, the mean of the hope for life of the experimental group was 19.78 ± 1.74 and it was 30.77 ± 1.59 in the control group which showed a significant increase of the hope for life score of the hemodialysis patients of the experimental group.

Conclusion: the stress inoculation program method has led to the increase of the hope for life of the hemodialysis patients; therefore, it is suggested that in addition to the prescription of psychological interventions drugs for these patients in the mental health improvement programs.

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Introduction

Chronic diseases are diseases which make the person involved for more than 3 months or even more (1). These diseases are currently the cause of 60% of the total rate of death in the whole world and more than 75% of the expenses associated with health cares have been assigned to patients with chronic disorders and these disorders have often caused death, lifelong disability, low quality of life and growing health costs (2). For instance, in the USA in the year 2008, the costs of health cares of the chronic patients have been estimated to be approximately 280 million dollars (3). In fact, being diagnosed with a chronic disease is one of the challenging situations people might experience and it is the main problem of today's international society (4). Among chronic diseases, asthma, cancer, diabetes, cardiovascular diseases and chronic kidney disease can be noted (5).

Kidney chronic disease is one of the chronic diseases for the abnormal structure of the kidneys going on for more than 3 months and it comes along with symptoms such as kidney damage, reduction of the rate of glomerular filtration, structural

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abnormalities or disorders of serum electrolytes (6). In fact, chronic kidney patient is a pathophysiological process with various causes followed by unavoidable reduction of the number and the function of nephrons and it usually leads to the end of the final stage kidney disease (7).

There are various treatment methods in treating the patients with chronic kidney disorders among which is hemodialysis which is the most common method of treatment (8). Although hemodialysis has changed the perspective of treating patients with the final stage of kidney disorders but it cannot change the natural course of the renal disease and replace the function of kidney completely and the patient is exposed to issues and side effects. In long term dialysis, patients go through hemodialysis two or three times a week and each session takes 3 to 4 hours which can make the patients tired (9). In fact, dialysis, as a solution for treating chronic kidney disorders, is a stressful procedure and results in numerous social and psychological problems which can build up for the occurrence of mental and physical disorders in these patients (10). In a study, stressful factors in hemodialysis patients with a similar group of a healthy population and it was specified that in fact, features such as depression, reduction of hope for life, loneliness, sadness, mental occupation with the disease and tendency to be alone and isolated is seen more in patients on hemodialysis(11). In fact, the most prevalent psychological side effect of the patients on hemodialysis is depression which is usually a reaction to imaginary or real shortcomings such as losing one's job, income, energy, sexual abilities, freedom, hope for life and so on (12,13). As the occurrence and the prevalence of psychological issues increases and the highness of the rate of death and the increasing costs of taking care of patients have resulted in the increase of the importance of the role of psychological interventions in reducing the psychological symptoms of these patients (14).

Stress inoculation program was mentioned for the first time by Mikenbam in 1985 as one of the psychological interventions and the most efficient prevention method (15). Stress inoculation program, like medical immunization, has been created based on encountering stressful conditions in the person with the purpose of forming psychological antibodies or skills for coping with stress (16). Stress inoculation program includes three stages of conceptualization, acquisitions of skills and practicing them. In fact, not only this intervention leads to the person coping with stressful factors and issues usefully, but the person achieves a more positive cognitive evaluation of themselves while encountering these factors with the purpose of showing successful behavior and subsequent to it, the person will experience more positive emotions and sensations as well and their self-confidence will be increased (17). The results of the study of Sheyhi and Horan (2004) showed that stress inoculation program has caused improvement of stress, anxiety and illogical beliefs of the students (18). In another research, stress inoculation program has led to the increase of flexibility, hope for life and marital satisfaction (19, 20, 21).

Now, given the importance of psychological intervention in reducing psychological symptoms and increasing the level of lives of patients on hemodialysis, "the present research aims to investigate whether or not stress inoculation program affects hope for life of patients on hemodialysis".

Method and tools

The present study is a quasi-experimental research of a pretest – posttest type with a control group. The independent variable is the intervening method of stress inoculation program and the dependent variable is the posttest scores of the hope for life scale. The statistical population of the research includes all of the patients on hemodialysis of the city Iranshahr in the dialysis section of Khatam Al-Anbia hospital. And by using the sampling method in hand, a number of 60 patients on hemodialysis were chosen as the sample (30 patients in the experimental group and 30 patients in the control group).

The experimental group received 8 sessions of experiment with the method of stress inoculation program and no experiment was done in the control group and at the end of the sessions, the posttest was done on both groups (experimental and control). Each weekly session was 90 minutes and there were 8 group sessions.

Steps to stress inoculation program has been instructed as body relaxation, distraction, guided self-talk, cognitive restructuring and problem solving. In the **first** session, at first the pretest was done. Then, by encouraging the person to do the treatment, a new and detailed logic was suggested. After establishing a positive friendly relationship based on cooperation with authorities, the purposes of treatment were mentioned practically and realistically and then they were helped so that they would have realistic perceptions and expectations of themselves. Also, the nature of the disease and importance of the issue of hope for life was discussed.

In the **second** session, the progressive body relaxation technique was instructed for 16 muscle groups.

In the **third** session, in addition to the progressive body relaxation technique, the distraction technique was instructed.

In the **fourth** session, in addition to the progressive body relaxation practice and distraction, cognitive restructuring was also instructed.

In the **fifth** session, in addition to the progressive body relaxation practice, distraction, and cognitive restructuring, guided self-talk was instructed.

In the **sixth** session, in addition to the progressive body relaxation practice, distraction, cognitive restructuring, and guided self-talk, it was attempted to instruct problem solving.

In the **seventh** and **eighth** session, all of the methods mentioned above were again applied to the testees and the necessary recommendations for continuing the training and applying the teachings were taught to them. In the eighth session, the tests used in the pretest stage were again given to the testees and they were asked to fill them out.

In order to collect information and data, in addition to demographic characteristics, the Miller hope for life questionnaire was used.

Miller hope for life questionnaire: this questionnaire is of the type of specification tests which was used for the first time in America for measuring the hopefulness of patients with heart disease to show the rate of hopefulness in them. This test was discussed and reviewed by six American professors in terms of coordination between suggested factors for hopefulness and accuracy in selecting various aspects in terms of behaviors indicating states of hopefulness and frustration and it was confirmed by them. This test includes 48 aspects of the states of hopefulness and frustration, the items mentioned in which have been selected based on implicit and explicit behavioral pretending in hopeful and hopeless individuals. There is a 5-option spectrum of responses for each of these aspects which are representative of a behavioral symptom (totally disagree 1, fairly disagree 2, no comment 3, fairly agree 4 and totally agree 5). Each person scores by selecting the sentence that fits them. The scores vary from 1 to 5. In the Miller test, the range of the scores achieved vary from 48 to 240. If a person gets the score 48, they are considered as completely frustrated and the score 240 shows the maximum hopefulness. Hosseini (2006) used the criterion question score in order to determine the validity of this questionnaire; in such a way that the total score of the questionnaire was correlated with the criterion question score and it was specified that there is a positive significant relationship between these two ($r=0.61$ and $II<0.000$). And in order to determine the reliability of the questionnaire two methods were used: Cronbach's alpha and split-half method and the reliabilities 0.90 and 0.89 were obtained. In this study, statistical analyses have been done by software (SPSS-22) and given the nature of the scales used in this research and in order to control the effects of the pretest and also consistent variables the multivariate covariance analysis test (ancova) was used.

Findings

Table 1 shows the research sample in two groups, experimental and control group.

Table 1. Research sample in the experimental and control group

Group	Number	Percentage	Density percentage
Experimental group	30	50	50
Control group	30	50	100
Total	60	100	-

According to the results of table 1, 50 percent of the persons selected as the sample were in the experimental group and the other 50 percent were in the control group.

In table 2, the research sample is shown as the genders were separated.

Table 2. Research sample with the separation of gender

Gender	Experimental group		Control group	
	Number	Percentage	Number	Percentage
Male	15	50	15	50
Female	15	50	15	50
Total	30	100	30	100

As the results of table 2 shows, in both experimental and control group, the samples have been divided equally regarding gender. In the experimental group, there were 15 men (50%) and 15 women (50%). In the control group, there were 15 men (50%) and 15 women (50%).

The mean and standard deviation of the criterion of the scores of the pretest and posttest regarding the rate of hope for life in the experimental and the control group have been presented in table 3.

Table 3. Mean and standard deviation of the criterion of the scores of the pretest and posttest regarding the rate of hope for life in the experimental and the control group

Variable	Group	Pretest			Posttest	
		Number	Mean	Standard deviation	Mean	Standard deviation
Hope for life	Experimental	30	168.23	25.136	174	19.78
	Control	30	159.066	30.95	159.43	30.77

According to the results of table 3, the mean of the hope for life scores of the experimental group in the pretest stage is 168.23 and this mean is 159.066 in the control group; whereas, in the posttest the mean of hope for life in the experimental group is 174 and it is 159.43 in the control group. As it is observed the rate of the scores of hope for life in the posttest of the experimental group has increased compared to the control group.

In this research, in order for an inferential analysis of the results, the covariance analysis has been used. Therefore, it is necessary to review the presumption of the normality of the scores. The basis of this presumption is that the difference between sample distribution and distribution of the normal scores in the population is zero. In order to test this presumption, the Shapiro – Wilk test is used. The results of this test for the scores obtained from pretesting the hope for life variable in the experimental and the control group have been presented in table 4.

Table 4. Results of Shapiro – Wilk test regarding the presumption of the normality of the distribution of scores

Normality of the distribution of scores	Group	Shapiro – Wilk test		
		Statistic	Degree of freedom	Significance
Hope for life	Experimental	0.959	30	0.292
	Control	0.936	30	0.07

As it is seen in table 4, the zero hypothesis for the normality of the distribution of the scores of the two groups in the research variables is confirmed which means that the presumption of the normal distribution of the scores in the pretest is confirmed in both the control and the experimental groups.

Presumption of equality of variances

In this part of the research, in order for the inferential analysis of the results, the covariance analysis has been used. Thus, it is necessary to review the presumption of the equality of variances of the two groups as well before analyzing the results. This presumption is based on the fact that the variances of the scores of the two groups of the population are equal and there is no significant difference between them. In order to test this hypothesis, the Levine test is used (Molavi, 2000). The results of the Levine test for the primary hypothesis of research has been presented in table 5.

Table 5. Results of Levine test regarding the presumption of equality of variances of the two groups in the population

Variable	F	Degree of freedom		Significance
		Numerator	Denominator	
Hope for life	1.930	1	58	0.170

As it is seen in table 5, the H_0 for the equality of the variances of the scores of the two groups of the research variables in the posttest is not rejected. Nonetheless, when the sample volume in both groups is nearly similar, the covariance analysis is not very sensitive to the loss of the assumption of the homogeneity of the variances in some of the variables. Thus, given that the Levine presumption has been observed, it is possible to apply the covariance analysis to the results in order to review the research hypotheses.

Given that in each variable, the posttest scores were the dependent variables and in order to control the effect of the posttest (on the control and the constituent variable) on the posttest scores the covariance analysis method was used.

Table 6. Results of the covariance analysis of the effect of stress inoculation program on hope for life and self-esteem in patients on hemodialysis in the control and the experimental group in the pretest stage

Index Source of changes	Total of squares	Degree of freedom	Mean of squares	F	Significance	Rate of effect	Statistical power
Pretest	674.12	1	674.214	8.905	0.004	0.137	0.83
Group membership	394.963	1	394.963	85.217	0.026	0.085	0.61

After eliminating the effect of the pretest scores and given the calculated F-value, it is observed that there is a significant difference between moderated means of the hope for life scores of the participants based on group membership (experimental and control group); thus this hypothesis is confirmed. The rate of the effect of the stress inoculation program method on hope for life is 0.08 which means that 0.8% of the hope for life variance has been related to the interventions of stress inoculation program. The statistical power near 1 means that it is not possible to confirm the H_0 wrongly. In other words, the accuracy of the test in discovering the differences has been very high and it is indicative of the sufficiency of the sample volume.

Discussion and conclusion

The hypothesis of the present research indicates that the medical method stress inoculation program affects the increase of the rate of hope for life in patients on hemodialysis in the Iranshahr city in the experimental group in the posttest stage. The results of this research show that the stress inoculation program method of intervention has led to the increase of hope for life in patients on hemodialysis. Most of the existing evidences show that stress is a very important factor in hemodialysis which caused change in the quality of life of ESRD patients and has negative impacts on the psychological and physiological well-being of the patients (22, 23, 24).

Findings of the present research can be complied with the results of the previous researches in which intervention of stress inoculation program has led to the significant reduction of depression and has increased hope for life (25, 26,27,28; 29,30).

Study of Sheyhi and Horan (2004) showed that application of stress inoculation program has led to the reduction of stress, anxiety and depression of patients (18). The results of the study of Ghafari, et al (2008) showed that progressive relaxation treatment is one of the techniques of immunization against stress treatment led to the significant reduction of depression, anxiety and stress of the patients with multiple sclerosis (31).

By considering the negative correlation of hope and depression, the findings of this research are justifiable. There are two assumptions for why hope leads to the reduction of depression, first one is that hope has a relationship with cognitive processing and its components are cognitive (agency and pathways thinking); therefore, making a change in these cognitive components can probably lead to the change of people's moods and behaviors(32,33,34).

Second one is that hopeful thinking helps people to focus on now and make efforts to reach the important goals of their lives now and in the future. This process is a kind of redirecting which leads to a kind of self-evaluation and probably this is what leads to the improvement of their mood (3, 35). In the opinion of Abraham (2002), the expectation of encountering undesirable consequences or the expectation of not achieving desirable consequences exposes the person to the risk of depression. These theorists believe that when undesirable but important are referred to for overall, fixed and internal causes, the person feels that he/she needs to find value defects(36). Thus, when a person does not succeed in reaching a goal and comes to this belief that their previous unsuccessfulness will be indicative of their next failures as well, hopelessness will happen (37).

In hope treatment, the therapist attempts to help the authorities change this cognitive pattern by determining proper goals, which are clear, objective, positive and internal goals based on growth and are achievable, and by determining suitable strategies for achieving them and also by focusing on their previous successes instead of focusing on failures and expanding expectation for success (38, 39). In the hope theory it is assumed that failure in reaching the goals frequently and inclusively reduces agency and pathways thinking and hence hope and this is the first step of the creation of depression (40). From this perspective, low level of hope might build the infrastructure for depression. In depressed people, both cognitive processes (goal-directed thinking and pathways thinking) and motivation (agency thinking) reduces (41). It is less likely for these people to effectively solve problems. The attempt to treat depression by focusing on hopeful thinking will probably lead to the improvement of the capacity for problem solving and showing emotions (39, 40). All of the signs of depression are important signs of the ability of determining and pursuing goals (40, 41). It seems that hope treatment can increase the preventive aspect of the treatment by changing patterns of thinking and instructing hopeful thinking so that there would be no return as one month of the treatment passes (36). Self-sufficiency, reformation of behaviors related to the disease in the respect of the patient's helping their own treatment are effective (37, 39). Nevertheless, these researchers have suggested shorter self-management interventions and simpler methods of reforming one's behaviors and they have recommended investigating and studying their effectiveness in the future.

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