

# The Effects of Motivational Interviewing on the Health Status of Patients Undergoing Hemodialysis

## Abstract

**Background:** Patients undergoing hemodialysis are exposed to a wide range of physical, psychological, and social problems. One of the most important strategies for health promotion in patients is motivational interviewing. This study investigated the effect of motivational interviewing on the health status of patients undergoing hemodialysis. **Materials and Methods:** This single-blind, parallel, randomized, clinical trial was conducted on 57 patients undergoing hemodialysis who referred to hemodialysis centers of Alzahra and Amin Hospitals, Isfahan, Iran. The participants were selected through quota sampling method and were assigned to the experimental and control groups. The experimental group received five sessions of motivational interviewing, while the control group received five sessions of group discussion about their disease. The General Health Questionnaire (GHQ) was completed by the participants before and after the intervention. Independent *t*-test, paired-sample *t*-test, and Mann–Whitney, Chi-square, and Fisher’s exact tests were used to analyze the collected data. In this study, the level of significance was 0.05. **Results:** Before the intervention, there was no significant difference between the mean scores of general health of the two groups ( $t = 0.48$ ,  $p = 0.631$ ). However, one week after the intervention, the mean score of general health in the intervention group was significantly lower than that of the control group ( $t = 3.12$ ,  $p = 0.003$ ). **Conclusions:** It can be concluded that motivational interviewing effectively improved the general health of patients undergoing hemodialysis, and using such interventions in these patients is recommended.

**Keywords:** Health status, hemodialysis, Iran, motivational interviewing

## Introduction

The main purpose of hemodialysis treatment is to help improve the life of patients with chronic kidney disease (CKD).<sup>[1]</sup> In 2013, approximately 23,200 patients undergoing hemodialysis lived in Iran and the cities of Tehran and Isfahan, Iran, had the highest number of patients.<sup>[2]</sup> Moreover, an annual growth rate of 15% in the number of patients has been estimated.<sup>[3]</sup> Hemodialysis exposes patients to a whole range of physical, psychological, and social problems and affects their physical and psychological health.<sup>[4]</sup> Previous studies have shown that the general health status of patients undergoing hemodialysis is poor and requires greater attention.<sup>[1]</sup> Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.<sup>[5]</sup> To maintain a general level of health, patients undergoing hemodialysis must follow the prescribed treatment regimen. Adherence to treatment plays an important role in the

effectiveness of hemodialysis and health promotion in patients.<sup>[5,6]</sup> Nonadherence to treatment in patients is an important factor in the exacerbation of the complications of the disease and treatment, and increased possibility of morbidity and mortality. However, 30% to 40% of the patients do not follow their treatment regimen.<sup>[7,8]</sup> Due to long-term use of hemodialysis and the resulting disorders in patients, it is essential to perform interventions for health promotion in patients. Considering that patients spend about 12 hours a week in hemodialysis wards, nurses, as important members of the medical team, play an important role in reaching this goal.<sup>[9,10]</sup>

In recent years, the impact of different interventions on behavioral changes in chronic diseases has been examined. A novel intervention is motivational interviewing that is effective on behavioral and lifestyle changes and improving patients’ adherence to treatment.<sup>[11]</sup> The approach is

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a patient-centered method that increases patients' intrinsic motivation and causes behavioral changes in patients by identifying and resolving their ambivalence.<sup>[12]</sup> Motivational interviewing, by changes in attitudes and beliefs, can change the behavior of patients undergoing hemodialysis, increase their adherence to treatment regimens, and improve their health status.<sup>[13]</sup> Improving patients' adherence to treatment can play an important role in improving their health.<sup>[5]</sup> In a study conducted by Hosseini *et al.*, motivational interviewing improved some of the variables of adherence to treatment such as fluid control in patients undergoing hemodialysis, but had no significant effect on other variables such as blood levels of sodium.<sup>[14]</sup> Butterworth *et al.* reported that motivational interviewing was effective on employees' physical and mental health status.<sup>[15]</sup> However, in Iran, no study was found regarding the effectiveness of motivational interviewing on the general health of patients undergoing hemodialysis. Considering the large number of patients undergoing hemodialysis in Isfahan and the complications of hemodialysis, improving the health of patients appears necessary. Hence, this study was conducted to determine the effects of motivational interviewing on the health status of patients undergoing hemodialysis.

## Materials and Methods

This single-blind, parallel randomized, clinical trial (registration code: IRCT2016110720675N2) was conducted among 57 patients with chronic renal failure who had undergone hemodialysis and were referred to the hemodialysis wards of Alzahra and Amin Hospitals in Isfahan for treatment. The study started on October 3, 2015 and finished on November 15, 2015. The sample size was calculated based on a previous study by Kiani *et al.*<sup>[16]</sup> The study sample included 60 patients (30 patients in each group), for which the confidence interval of 95% and statistical power of 80% were considered. The researcher extracted the list of patients undergoing hemodialysis by referring to patients' medical records in the selected centers, and invited them to the study with the help of health agents. After gathering the invited individuals in the centers and checking the inclusion criteria, the goal of the study was explained to them by the researcher. Individuals who met the inclusion criteria (purposive sampling) and agreed to participate in the study were selected after giving them further explanations about the study, assuring them of the confidentiality of their information, and obtaining a written consent from them. Then, the participants were assigned to experimental and control groups through minimization method (allocation ratio was 1:1). Minimization aims to ensure that treatment arms are balanced with respect to predefined patient factors as well as the number of patients in each group.<sup>[17]</sup> Hence, the variables that affected the outcome of the study were entered into the software by a statistician, and according to these criteria, the participants were placed into two groups. The demographic characteristics form and

General Health Questionnaire (GHQ) were completed by the participants before the intervention was performed. The inclusion criteria were being within the age range of 18–60 years, the ability to speak, read, and write in Farsi, having undergone hemodialysis for at least 3 months, and lack of any psychological therapy. The exclusion criteria were loss of interest in continuing the study, absence from one or more motivational interviewing sessions, and hospitalization during the study. Since Miller and Rollnick believed that implementing group motivational interviewing in small groups is more effective than implementing it individually,<sup>[18]</sup> in this study, the participants in the experimental group were divided into three small groups ( $n = 10$ ). The motivational interviewing for each of the groups were held in five sessions for five consecutive weeks, and each session lasted for about 90 minutes. The content of the motivational interviewing sessions was extracted from a guidance book on group motivational interviewing<sup>[18]</sup> and was conducted by the researcher who had previously received the necessary training. The structure and content of the motivational interviewing sessions are explained below. The first session was the introductory session and consisted of group norms and processes, practice of freedom and dimensions of behavior influence, and change in the cycle assessment of commitment. The second session was related to emotion and consisted of identifying feelings practice, and perfecting the exercise of influence dimension and emotional dimension. The third session was related to aspects of behavior and change and included practicing brainstorming of short-term and long-term profit and losses, practicing the complete table of the positive and negative aspects, and practicing the corrective and alternative options. The fourth session was related to values and consisted of defining values, practicing the identification and prioritization of values, practicing the defining of values, and value-behavior consistency. The fifth session was the final vision and consisted of summarizing and concluding previous training sessions in a landscape practice and preparation for the initiation of behavior change programs. Participants in the control group also participated in five group discussion sessions about care related to renal disease. As this was a single-blind clinical trial, the participants were not aware of the group they were in.

The data collection instruments included demographic characteristics form and the Farsi version of the GHQ. The GHQ is composed of 28 items scored on a 4-point Likert scale ranging from 0 to 3. The total score ranges between 0 and 84; higher scores indicate a greater severity of symptoms. The Farsi version of the GHQ was validated by Noorbala *et al.*, and its reliability was approved with a Cronbach's alpha of 0.74.<sup>[19,20]</sup> All participants in the experimental and control groups answered the questionnaire at the beginning of the study and one week after the last intervention session. Statistical analysis was performed using SPSS software (version 18, SPSS Inc., Chicago, IL, USA). Descriptive statistics were calculated. Data were

analyzed using descriptive statistics, and independent Chi-square test and Mann–Whitney test (to determine the relationship between dichotomous variables and compare an ordinal variable between the two groups), independent *t*-test (to compare the mean scores of quantitative variables with normal distribution in the two groups), paired *t*-test (to compare the health scores in the two groups during the two subsequent measurements). The level of significance was considered to be 0.05.

**Ethical considerations**

The ethics committee of Isfahan University of Medical Sciences approved this study under code IR.MUI.REC.1395.2.117. Informed consent forms were completed by all patients and their families.

**Results**

Overall, two patients in the experimental group and one patient in the control group were lost to follow-up, and finally, 28 patients in the experimental group and 29 patients in the control group entered the analysis [Figure 1]. No significant differences were observed between the two groups in terms of demographic characteristics ( $p > 0.050$ ) [Tables 1 and 2]. No significant difference was found in the mean health score and its dimensions between the two groups before the intervention ( $p = 0.631$ ). However, the

mean health score and its dimensions, except the somatic symptoms dimension ( $p = 0.535$ ), differed significantly between the intervention and control groups after the study ( $p = 0.003$ ) [Table 3].

**Discussion**

The results showed that, after the intervention, the mean health score was significantly lower in the intervention group compared to the control group. Many studies have reported the positive role of motivational interviewing in health promotion among patients. Hosseini *et al.* showed that motivational interviewing was effective on the improvement of adherence in patients undergoing hemodialysis and reported a significant reduction in weight and levels of potassium and phosphorus in the experimental group.<sup>[14]</sup> The findings of Butterworth *et al.* showed that motivational interviewing improved employees’ physical and mental health status.<sup>[15]</sup> In their study, 276 employees of a medical center participated in motivational interviewing sessions (three-month period).<sup>[15]</sup>

The findings of the present study showed that motivational interviewing can reduce patients’ symptoms of anxiety, depression, and sleep disorders and improve their social functioning. The results were consistent with the study by Ponsford *et al.*<sup>[21]</sup> who reported that motivational interviewing in combination with cognitive behavioral therapy can reduce anxiety and

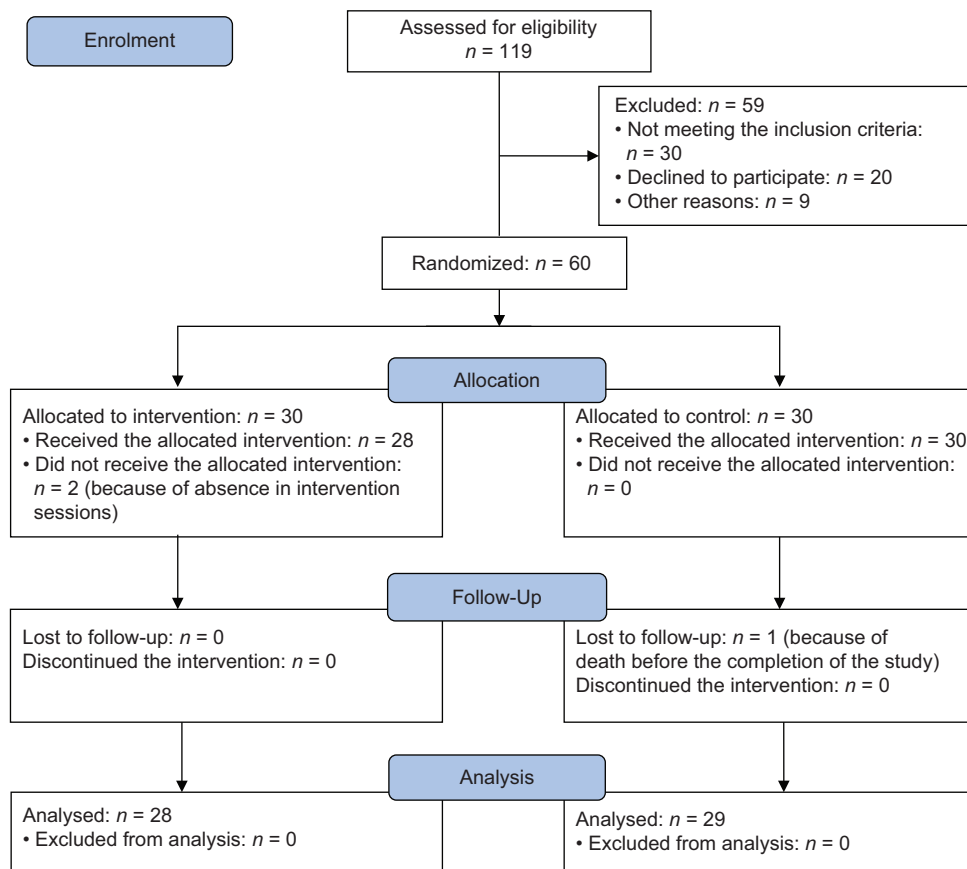


Figure 1: Inclusion and exclusion status of the study sample (consort chart)

depression in patients with brain injury and promote patients' mental health. Rajabipour *et al.* showed that motivational interviewing promotes physical, mental,

and social health in cancer patients.<sup>[22]</sup> In the present study, motivational interviewing improved the somatic symptoms dimension, but the improvement in the experimental group, as compared with the control group, was not statistically significant. However, the current study's finding was in contrast with the results of Rajabipour *et al.*<sup>[22]</sup> Such inconsistencies might be attributed to the considerable difference between the study populations because Rajabipour *et al.* studied patients with colon cancer, whereas the participants in the current study were patients undergoing hemodialysis. One of the other reasons for this difference could be the post-intervention assessment. In their study, the posttest assessment was one month after the intervention, but in the present study, the assessment was one week after the intervention. Bombardier *et al.* investigated the efficacy of telephone counseling in health promotion among 130 individuals with multiple sclerosis (MS).<sup>[23]</sup> The findings revealed that motivational interviewing-based telephone counseling improved health and physical activity in the participants.<sup>[23]</sup> However, the current study's finding was in contrast with the results of their study and the intervention could not improve physical activity in the participants. Such inconsistencies might be attributed to the significant difference between the physical conditions of the patients. Perhaps, the physical condition of the patients undergoing hemodialysis was different from that of MS patients. The small sample size and relatively short duration of follow-up might be considered as limitations to generalizing the findings of

**Table 1: Comparison of the mean age and length of treatment between the two groups**

Group variables	Intervention Mean (SD)	Control Mean (SD)	Independent t-test	
			t	p
Length of treatment	5.04 (2.50)	4.83 (2.80)	0.30	0.768
Age	51.10 (10.10)	48.59 (10.60)	0.93	0.350

**Table 2: Comparison of the mean and frequency distribution of patients' demographic characteristics between the two groups**

Variable	Intervention No	Control No	Test statistics	
			$\chi^2$	p
Sex			0.01	0.571
Female	10	10		
Male	18	19		
Education			0.48	0.628
Illiterate	7	3		
Literate	21	26		
Marital status			0.96	0.326
Single	9	6		
Married	19	23		
Occupational status			0.50	0.912
Employed	17	20		
Unemployed	11	9		

**Table 3: Comparison of the mean score of general health and its domains before and after the intervention in the two groups**

Domains	Time	Intervention Mean (SD)	Control Mean (SD)	Independent t-test	
				t	p
Somatic symptoms	Before the intervention	8.54 (3.89)	7.14 (3.54)	1.40	0.161
	After the intervention	7.04 (3.28)	7.62 (3.76)	0.62	0.535
	t	2.76	0.67		
	p	0.010	0.508	-	-
Anxiety/insomnia	Before the intervention	8.18 (4.05)	9.14 (3.52)	0.90	0.345
	After the intervention	6.64 (3.72)	8.79 (3.50)	2.24	0.029
	t	2.36	0.42		
	p	0.026	0.675	-	-
Social dysfunction	Before the intervention	7.79 (3.22)	8.21 (2.65)	0.54	0.592
	After the intervention	6.46 (2.60)	8.1 (3.01)	2.16	0.035
	t	2.47	0.15		
	p	0.020	0.882	-	-
Depression symptoms	Before the intervention	9.29 (3.09)	10.66 (3.71)	1.50	0.137
	After the intervention	7.57 (2.85)	9.52 (3.58)	2.26	0.027
	t	2.63	1.50		
	p	0.014	0.142	-	-
General health	Before the intervention	33.82 (10.00)	35.14 (10.54)	0.48	0.631
	After the intervention	27.68 (7.17)	34.03 (8.14)	3.12	0.003
	t	3.63	0.54		
	p	0.001	0.593	-	-

this study. Therefore, the performance of similar studies with larger sample sizes and longer periods of follow-up is recommended.

## Conclusion

The results of this study showed that motivational interviewing improved anxiety, depression, and general health in patients undergoing hemodialysis. Thus, nurses can use motivational interviewing to improve health in patients undergoing hemodialysis.

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## Conflicts of interest

Nothing to declare.

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