



Original Article

## Effectiveness of motivational interviewing on medication adherence in patients with breast cancer

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### Abstract

**Introduction:** Breast cancer is a chronic and debilitating disease that accompanied with many psychological problems in diagnosis and treatment process, which reduces adherence to treatment. Various interventional models have been used to increase adherence to treatment. One of these models is motivational interview. The present study aimed to determine the effectiveness of motivational interviewing on adherence to treatment in patients with breast cancer.

**Materials and Methods:** In this clinical trial, 44 patients with breast cancer who referred to Kowsar hospital in Semnan were selected and randomly assigned into three groups (group intervention, individualized intervention and control). Morisky 8-Item Medication Adherence Questionnaire used for pre and post-test. After pre-test, individual and group motivational interviews (5 weekly 45 minute sessions) performed. Data analyzed by covariance analysis in SPSS-21 software.

**Results:** The findings of one-way ANOVA showed that there was no significant difference in pre-test scores of medication adherence between the groups ( $F= 0.188, P= 0.829$ ). The results showed that the mean score of medication adherence in individualized and group intervention increased, while the scores of the control group reduced. Therefore, motivational interviewing increased medication adherence in individualized and group interventions ( $P<0.002$ ).

**Conclusion:** Generally, motivational interviewing is effective to increase medication adherence in patients with breast cancer. Considering no significant difference between individualized and group intervention, group intervention recommended due to the cost-effectiveness.

**Keywords:** Breast cancer, Interview, Medication adherence, Motivation.

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### Introduction

Breast cancer is one of the most important and global health problems in women and the most common cancer in many countries in the world. Breast cancer referred to as malignant abnormal

proliferation of neoplastic cells in the breast tissue. According to data from the American Cancer Society, the incidence of breast cancer was 193000 cases annually and predicted to cause about 40,000 deaths in women (1).

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The chance of developing breast cancer in Iranian women is 10 percent. Studies show that the mean age of Iranian women with breast cancer is about 10 years younger than their western counterparts (2). Also, based on the World Health Organization definition, cancer is a chronic disease such as cardiovascular diseases, chronic kidney disease, asthma, and diabetes which last for more than 3 or 6 months. So, patients should live with these illnesses for a long time (3). Medication adherence is still a significant issue in chronic diseases. Health care adherence is usually related to the individual's ability to maintain care giving behavior along with the care plan, and use of medications ultimately, timely presence in predetermined schedules, follow-up, and compliance with the necessary changes in health behaviors; otherwise, there will be a lack of tolerance. Non-compliance is a consciously and deliberate decision that the patient disregard or does not follow the therapist's instructions. Medication adherence can predict successful therapy and reduces the complications and severity of the disease and failure to follow a therapy. Failure to follow a therapy defined as the degree of non-conformity of the individuals' behavior with health or therapeutic recommendations is a complex behavioral process. It is affected by several factors such as individual characteristics, the relationship between patient, physician, and health care system (4).

At least half of the patients who have recently been diagnosed with cancer do not follow the treatment recommendations (5). Although people and physicians spent a lot of time and energy in process of diagnosis but many patients fail to follow recommended medical guidelines. Non-compliance with cancer treatments such as chemotherapy or radiotherapy due to side effects can lead to poor outcomes, exacerbated and prolonged disease (6). Based on the conducted studies, motivational interviewing, along with medical treatments, would control the fluid intake and increase the follow-up of dialysis patients (7). Also, Mirkarimi et al. (8) showed that motivational interviewing was intended to improve and enhance the commitment to implementing therapeutic interventions and blood pressure control in patients with hypertension. In another study by Özdemir and Taşçı, motivational interviewing strategies could be used to provide lifestyle changes and strengthen patients' self-management in early

diagnosis and treatment of cancer (9). More than 8,000 new cases of breast cancer are diagnosed in Iran annually, of which about 7778 cases are reported among women. With due attention to the psychological effects of this chronic disease on patients, their families, and the society, the necessity of diagnosis, treatment and control of disease is revealed in Iran. Considering, the novelty of motivational interviewing in Iranian patients with cancer and its short-term and economic feasibility as very important factors, the present study aimed to determine the effect of the motivational interview on medication adherence among women with breast cancer.

### Materials and Methods

In this clinical trial all women with breast cancer referred to Kowsar Hospital in Semnan city during March 2018 to February 2019 enrolled in study. The sample size was determined based on G-Power software based on the effect size of the previous studies. Sixty women who received diagnosis of breast cancer and undergone surgery selected based on inclusion criteria. The participants randomly divided into three groups (individualized intervention, group intervention and controls).

Inclusion criteria included female patients with breast cancer undergoing mastectomy and chemotherapy process and having a high level of tumor marker. Exclusion criteria included failure to attend a meeting, terminated of chemotherapy, and undergoing another psychological treatment.

To increase the generalization of the results we used matching, homogenization and random assignment. The patients matched for type of treatment, degree of cancer, dosage, and duration of medications. Finally, for a variety of reasons, including lack of attendance at interviewing sessions, loss of post-test or unwillingness to cooperate and deterioration of the physical condition, 16 patients have been excluded from the study and 44 patients (15 in the individualized intervention, 14 in group intervention and 15 in control group) enter to final phase of study.

### Research instrument

A) *Morisky Medication Adherence Scale-8 (MMAS-8)*: This scale includes 8 items which in 7 items, the answer is as "yes" or "no" and in item 8, the answer is in Likert scale as never= 0, rarely= 1, sometimes= 2, often= 3, and

always= 4. The total score of the questionnaire is obtained from the sum of all the questions. The higher score indicates a higher *medication* adherence while the lower score indicates the lower level of *medication* adherence. The validity of the original version of the scale was reported as Cronbach's alpha equal to 0.83 and it was translated to Persian by Bakaiyan. Its validity was reported equal to 0.89 (10). In the present study, in order to increase internal consistency and reduce bias to yes responses, all 8 items were scored by the researcher as a percentage Likert scale (11 points: 0= never, 1= 10%, 2= 20%, 3= 30%, 4= 40%, 5= 50%, 6= 60%, 7= 70%, 8= 80%, 9= 90% and 10= 100%). The calculation of scores was based on the percentage of responses to total score. The validity of this questionnaire was confirmed by Ghanei et al. (11) with Cronbach's alpha of 0.72. Also, another study of Kooshyar et al. (12) confirmed the validity of this questionnaire and its reliability as 0.68.

*B) Demographic questionnaire:* This was a researcher-made questionnaire designed to collect the demographic characteristics. This form includes age, marital status, educational level, employment status, family income level, type of health insurance, duration of cancer, cancer grade, stage of disease, family history,

and treatment interventions (chemotherapy, radiotherapy or medical).

In this study, ethical principles were followed by informed consent which was signed by participants and protecting their confidential information, as well as this study was approved by ethical committee of Semnan University of Medical Sciences and Health Services (Code: IR.SEMUMS.REC.1396.113) and registered in IRCT (ID: IRCT2015122802573 2N29). Participants assigned in three groups. The first group received individualized intervention, the second group received group intervention and the third group was control. The first and second groups received five 45-60 minute sessions of motivational interviews while the control group did not receive any intervention. The posttest performed in all three groups after 5 weeks.

The structure of motivational interviewing sessions was extracted from the workbook of motivational interviewing for group intervention (13). The structure of the sessions and content of each session is briefly summarized in Table 1. The practitioner of this intervention was a Ph.D. student of psychology who had completed motivational interviewing courses. Descriptive statistics and covariance analysis used to analyze the data in SPSS-21 software.

**Table 1.** Structure and content of motivational interviewing sessions

Session	Content
First	Familiarity: Referrals, norms and process of group, facilitator philosophy, practice of freedom, practice of dimensions of the effect of behavior, cycle practice, change assessment of commitment and confidence
Second	Emotions: Exercise identifying sentiment, Practicing and completing exercise dimensions with emotional dimensions and homework
Third	Positive and negative dimensions of behavior and change: Mental practice of short and long term profits and losses, practice completion of the table, positive and negative dimensions, description and practice, corrective and alternative options
Fourth	Values: Definition of values, doing the task of identifying and prioritizing values in one, the practice of defining values, and practicing the matching of value and behavior
Fifth	Prospects and final measurements: Summarize past session exercises in the form of a vision training and preparation for a change behavior program

All participants were under chemotherapy. The mean ( $\pm$ SD) age of the participants in groups of individualized intervention, group intervention and control were 51.33 ( $\pm$ 8.54), 47.51 ( $\pm$ 10.51), and 51.20 ( $\pm$ 9.68) respectively. The education level in the group intervention participants as follow: 53.3% elementary school, 20% diploma, 20% bachelor's degree, and 6.7% had master degree. In the individualized intervention participants, these levels of education were 50%, 28.6%, 14.3% and 7.1%

respectively. In the controls 33.3% had elementary education, 60% had diploma and 6.7% had bachelor's degree. Chi-square test was used to evaluating of demographic variables differences between the groups. The results showed that there is no significant difference in demographic characteristics in three groups, with the exception of underlying disease, which were negligible. The results are presented in Table 2.

**Table 2.** Chi-square test for demographic variables

Variables	P	F	X <sup>2</sup>
Marital status	0.555	2	1.179
Education	0.739	2	0.605
Job	0.779	2	0.498
Insurance	0.205	2	3.174
Income	0.437	2	1.654
Stage of disease	0.024	2	7.440
Family history	0.893	2	0.227
Duration of disease	0.742	2	0.596
Underlying disease	0.045	2	6.183
Underlying psychiatric disorders	0.210	2	3.120
Disease awareness	0.062	2	5.577

One way analysis of variance (ANOVA) was performed to evaluate the difference between the pre-test scores in the three groups. The results showed no significant difference between the groups in medication adherence in

the pre-test (F= 0.188 and P= 0.829 respectively).

Table 3 presents the descriptive findings of medication adherence in the three groups and the results of the analysis of covariance.

**Table 3.** Medication adherence in the pre and post-test stages

Variable	Group	Pre-Test		Post-Test		Statistical			
		Mean	SD	Mean	SD	F	P	Effect size	Power
Medication adherence	Individual	7.93	2.91	9.06	4.14				
	Group	5.14	2.90	8	3.63	7.22	0.002	0.257	0.915
	Control	5.26	2.91	4.0	2.36				

As shown in Table 3, the means of medication adherence scores in the group intervention participants increased (7.33 to 9.69) and in individualized intervention participants from 5.4 to 8.0. The scores of medication adherence in the control group decreased (5.6 to 4.20).

In order to covariance analysis, results of the Leven's test showed that there is an equality of variances between the groups for this variable. In addition, the results of the Kolmogorov-Smirnov test showed that distribution of medication adherence scores in participants was normal and covariance analysis test used for analysis.

By controlling the effect of pre-test on post-test, there was a significant difference between pre-test and post-test in scores of medication adherence in all three groups (P=0.002). In addition, the results show the effectiveness of

group and individual motivational interview on medication adherence (F=7.21, P=0.002, effect size: 0.257, observed power: 0.915). Bonferroni post hoc test used to examine the differences between groups. The results showed that there was no significant difference between the group intervention and individualized intervention group, but there was a significant difference between the individualized intervention and control group (P< 0.001), and group intervention with control group (P= 0.001).

### Discussion

According to the results, motivational interviewing in formats of group and individualized interventions has a significant effect on increasing medication adherence in patients with breast cancer. Also, there is no

difference between two formats of individual and group interventions. These findings are consistent with the results of Hosseini et al. (7), Mirkarimi et al. (8), Rüscher and Corrigan (14), Levensky et al. (15), Bean et al. (16), and Palacio et al. (17). For example, Hosseini et al. showed that motivational interviewing, along with medical therapies, can control the fluid intake and increase the follow-up in dialysis patients (7). These results confirm the effectiveness of motivational interviewing on medication adherence. Mirkarimi et al. reported that the motivational interviews can improve and enhance the commitment to implement therapeutic interventions. It is appropriate and effective intervention to control blood pressure in patients with hypertension (8). These results also confirm the findings of the present study. Also, Palacio et al. indicated that the techniques used in the motivational interview could increase medication adherence in different clinical groups (17).

Spencer and Wheeler in a systematic review conducted on patients and survivors of cancer concluded that motivational interviewing is effective in these patients. The studies were categorized into three groups based on behavioral outcome: lifestyle behaviors, psychological outcomes, and cancer symptom management. Based on the findings, there is strong evidence for the effectiveness of motivational interviewing on lifestyle behaviors as well as the psychosocial needs of patients with cancer and survivors (18).

The main difference between the present study and other studied is in the target populations. Most studies have evaluated the effectiveness of motivational interviewing in patients with diabetes, obesity, and so on. In addition, the other difference was the comparison of motivational interviewing in a group and individual methods. In this study, individual and group interventions used to determine the effectiveness of this intervention. For explanation, it can be said that the motivational interview is an effective method on motivation level. One of the most important methods of this intervention is the relationship between the therapist and the patient. This intervention emphasizes the collaboration which extends medication adherence in patients. Also, the empathy between the therapist and patient is a key issue that addressed in this intervention. In this regard, various studies have emphasized the great contribution of empathy and

participation during the treatment process (14,15,19,20). Román-Rodríguez et al. reported that empathy and participation during motivational interviewing are very effective methods to increase medication adherence, especially timely medication administration. Therefore, theoretically, empathy and participation during the motivational interviewing were supported to influence medication adherence (19). Health care providers typically spend considerable time to persuade people to change unhealthy behaviors. The available evidences consistently indicated a behavior cannot be successfully reformed unless patients set goals and believe that it needs to change internally. Motivational interviewing respects the patient's autonomy and independence; it's up to the person to decide how he or she recognizes action to change behavior. This approach can improve the interaction between health care providers and clients (20).

The results of the present study showed that motivational interviewing has a significant effect on medication adherence in patients with breast cancer who undergone surgery, which may be due to the use of motivational interviewing techniques such as doubt, hesitation and self-esteem. According to the current study, participants in the motivational interviewing group were more adherent to self-management behaviors and medication adherence after surgery than the control group. The results of the present study are similar to previous studies that show the effect of motivational interviewing on the acceptance and following of healthy behaviors (21). Motivational interviewing through increased intrinsic motivation and readiness for change, increased active participation, persistence and adherence to the treatment plan, reinforcement of positive behavior, increased concern about unhealthy behaviors indirectly, without pressure and coercion, assessing of benefits and loss of change, determining values, increasing conflicts between nutrition and values, providing information, evaluating and enhancing of trust to change, supporting self-efficacy, and increasing self-management behaviors lead to medication adherence (22).

In addition, this approach directly addresses the motivational problems that have confused healthcare professionals for the last time. In most cases, the only action was that patients were reprimanded for lack of motivation and

charged with "resistance to treatment" and "disregard the caregiver plans". In comparison, one of the positive roles of motivational interviewing has been the change in thinking. Motivational interviewing has highlighted that promoting motivation for change is an important part of a therapist's role and can improve the cooperation in treatment by people who needs, but does not follow; it also increases the participation of people who refuse certain treatments (23).

Participants exchange information about self-management behaviors following breast cancer surgery during motivational interviewing and out-of-session meetings. In addition to the informational dimension of social support, its emotional dimension should be considered (24). In this study, participants in the group motivational interviewing were more committed to performing medical interventions than the control group. In general, motivational interviewing is important due to decreased resistance, and reinforcement of internal motivations, capacity, and enhanced therapeutic outcomes in the field of cancer problems. It can be said that motivational interviewing increases the rate of participation and success of subsequent treatment modalities.

This study has its own limitations as any others. Including lack of follow-up period, target population for attendance, quantitative and cross-sectional study design, lack of control

in age, low sample size due to prevalence of the patients, lack of access to background for comparing the individual and group methods in the breast cancer community and the limitations of the target group due to health conditions made it difficult to conduct research. It is suggested that a follow-up period be used in future studies, which designs as quantitative and qualitative studies. In addition, longitudinal or long-term designs with larger sample sizes are recommended. Since there was no record of comparing the two intervention methods, it is suggested that further studies be conducted to test the results of present study.

### Conclusion

Based on the results, it can be suggested that training for motivational interviewing in the cancer intensive care unit should be considered. Also, it seems that motivational interviewing is an appropriate intervention for management of patients with breast cancer due to emphasis on empathy and resolution.

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