Original Article

The Effect of Training Based on the Family-centered Empowerment Model on the Self-efficacy and Self-esteem of Patients Undergoing Chemotherapy: A Quasi-experimental Study

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Abstract

Background: Physical and psychological complications and consequences of chemotherapy cause a decrease in the level of self-efficacy and self-esteem among patients. This study was conducted with the aim of evaluating the effect of training based on the family-centered empowerment model on patients' self-efficacy and self-esteem undergoing chemotherapy.

Methods: In this quasi-experimental study, 88 patients who were undergoing chemotherapy referred to Shahid Mostafa Khomeini Hospital in Ilam city, from July 2022 to July 2023, were assigned based on even and odd days of referral to the chemotherapy department in the intervention group (44 individuals) and control group (44 individuals). For the intervention group, the training program based on the family-centered empowerment model was conducted in 5 sessions of 45-60 minutes, once a week in the presence of an active family member of the patients; also,the control group did not receive any intervention and received only routine care. Data were collected using the demographic profile form, Scherer 's Self-Efficacy Questionnaire, and Rosenberg's Self-Esteem Questionnaire. Data were analyzed through Stata software, version 15, using Chi-square, paired and independent t-test with a significance level of $P<0.05$.

Results: After the intervention, the mean score of self-efficacy in the intervention group was higher than the control group ($P=0.001$). Moreover, the mean score of self-esteem in the intervention group was significantly higher than the control group ($P=0.0005$).

Conclusion: Given the effect of the family-centered empowerment model training program in increasing the level of self-efficacy and self-esteem in cancer patients who were undergoing chemotherapy, the training of this intervention, along with other interventional measures, is recommended for patients undergoing chemotherapy by medical centers.

Keywords: Cancer, Empowerment, Nursing model, Self-efficacy, Self-esteem

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Introduction

According to the latest global cancer statistics (Globocan), which reports the most up-to-date rate of cancer patients worldwide, the total number of patients with cancer worldwide in 2022 was 19976449 people, which is expected to reach 53504187 people in the next 5 years.[1] There was a total of 137198 cancer patients in Iran in 2022, and this number will reach 357906 in the next 5 years.[2] For many cancer patients, chemotherapy and its side effects (nausea, vomiting, loss of appetite, dry mouth, feeling tired or weak, hair loss, changes in skin and nails, fever, mouth sores, impaired concentration and memory, and diarrhea) can cause emotional distress, depression, anxiety, and negative physical consequences such as sleep problems and fatigue.[3, 4] The consensus is that mental and physical disorders caused by chemotherapy can disrupt the patient's self-efficacy through the disintegration of the individual's mental process.[5]

The results of studies also show a low level of self-efficacy among cancer patients undergoing chemotherapy.[6-9] A high level of self-efficacy in patients undergoing chemotherapy can play a role in their better adaptation to the conditions of chemotherapy and its side effects; it can also improve the sense of control and management of chemotherapy side effects.[10] Since the level of self-efficacy in patients undergoing chemotherapy is low, it is necessary to hold interventions to improve the level of self-efficacy in them.[11] The results of studies show a low level of self-esteem among patients undergoing chemotherapy, which requires interventions to improve it in this group of patients.[12-14] The importance of this issue is that low self-esteem is associated with negative results and outcomes in chemotherapy.[14]

Chemotherapy involves a long-term process; therefore, cancer patients need to develop coping strategies and support resources to manage their disease. Patients receiving chemotherapy need a source of social support. Families are the closest units to patients and have a great influence on their development. Therefore, the presence of the family can help to form the identity and sense of self-esteem for patients undergoing chemotherapy.[15] According to the mentioned points, it is possible to take measures to improve self-efficacy and self-esteem among chemotherapy patients through family-centered care education. Family-centered care is an innovative approach to healthcare planning, implementation, and evaluation that is based on mutually beneficial collaborations between patients, families, and healthcare providers.[16]

The eight components of the family-centered empowerment model include respect, coordination and integration of care, information and education, emotional support, participation in care, joint efforts, continuity and transfer, and access to care.[17] Family has an essential role in the formation of self-efficacy of people in different stages of life, and the main goal of the family-centered empowerment model is to empower the family system (the patient and other family members) to improve all aspects of health for the patients.[18, 19] Therefore, this study was conducted to determine the effect of education based on the family-centered empowerment model on the self-efficacy and self-esteem of patients undergoing chemotherapy.

Materials and Methods

This is quasi-experimental study, and the research population consisted of cancer patients undergoing chemotherapy in Shahid Mostafa Khomeini Hospital in Ilam city, who were examined from July 2022 to July 2023. Inclusion criteria were being 20-70 years old, passing at least six months and maximum three years since the definitive diagnosis of cancer, undergoing chemotherapy at the time of the study, having at least reading and writing literacy of the patient or an active family member, not participating in another interventional study at the same time as conducting research and consenting to participate in the study. Exclusion criteria

included death during the study, transfer or continuation of treatment in centers outside Ilam city, non-cooperation of the patients or their family members, and absence in more than one of the training sessions. The sample size was based on the study of Abedini et al.[20] and the following formula:

$$n = \frac{\left(z_{1-\frac{\alpha}{2}} + z_{1-\alpha}\right)^2 \sigma_b^2}{\delta^2} + \frac{z_{1-\frac{\alpha}{2}}^2}{2}$$

By estimating the comparison of means for paired data, the mean (standard deviation) of self-esteem of the intervention group before and after the intervention was 33.74±5.09 and 36.26±3.82, respectively. Moreover, for the control group, the mean (standard deviation) of self-esteem before and after the intervention was 33.11±5.44 and 33±5.57, respectively. Considering the power of 80%, the alpha level of 0.05, and the correlation value between before and after the intervention was 0.5, and considering the 10% dropout of the sample, 88 persons were considered (44 persons in the intervention group and 44 persons in the control group). First, the sampling method was available in such a way that the patients who had the conditions to enter the study were included as a research sample if they were willing to participate in the study. Then, the sampling method based on odd and even days of visit was used to allocate the samples to the intervention and control, and the patients were divided into two groups of 44 persons: intervention and control.

Demographic information form, Scherer et al.'s General Self-Efficacy Questionnaire (GSE, and Rosenberg's Self-Esteem Questionnaire (RSE) were used to collect the data. The demographic information form included the patients' information, age, sex, marital status, education level, place of residence, and the percentage of active family members helping the patient. The GSE questionnaire was designed and psychometrically analyzed by Scherer et al. in 1982; it has 17 items scored based on a 5-point scale (completely disagree (score 1), disagree (score 2), neither agree nor disagree (score 3), agree (score 4), completely agree (score 5)). The score range of this questionnaire was 17-85. Higher scores indicated a higher level of self-efficacy. The scores between 17 and 34 indicate a low level of self-efficacy, between 34 and 51 indicate an average level of self-efficacy, and between 51 and 85 indicate a high level of self-efficacy among patients.[21] Scherer and colleagues have reported Cronbach's alpha of this questionnaire to be 86% using the test-retest method.[21] In Iran, this questionnaire has been psychometrically analyzed by Asgharnejad etal. (2004). andthe internal consistency coefficient of the scale was estimated to be 0.83.[22]

The RSE Questionnaire was designed and developed by Rosenberg in 1965, which has 10 questions that measure life satisfaction and feeling good about people. The scoring method of this scale is as follows: questions 1 to 5, completely disagree=zero, disagree=1, agree=2, and completely agree=3. Also, in questions 6 to 10, completely agree=zero, agree=1, disagree=2, and completely disagree=3. The maximum score is 30 and the minimum score is 0, with scores above 25 indicating high self-esteem, scores between 15 and 25 indicating average self-esteem, and below 15 indicating low self-esteem. Rosenberg has reported the stability of the scale as 0.9 and its scalability as 0.7. Cronbach's alpha coefficients for this scale were calculated as 0.87 for men and 0.86 for women in the first round and 0.88 for men and 0.87 for women in the second round.[23] In Iran, this scale has been subject to face and content validity (results of content validity: 75.5-100 percent) and reliability (by checking the Cronbach's alpha rate of 0.80 for the whole scale) by Ranjber et al. (2013); the validity and reliability of this the questionnaire were approved.[24]

The third author (MRB) went to the chemotherapy department at certain hours of the day and selected the samples from among the patients admitted to the department who were eligible to enter the study in an easy way; while explaining the research method and objectives,

he invited them to participate in the study. After providing the necessary explanations about the goals and stages of this study and obtaining written consent from the patients, they were assigned based on even and odd days of referral to the chemotherapy ward into two control and intervention groups, respectively.

Then, the patients of both groups filled out the demographic information form, the GSE questionnaire, and the RSE questionnaire in a self-report manner; then, the intervention was performed for the intervention group. The intervention included training based on the family-centered empowerment model with the presence and participation of a patient and an active family member (a family member who is responsible for caring for the patient) in the form of groups of 3-5 patients with their active family members and during 5 sessions for 5 weeks (one session each week). Patients in the intervention group were trained in 8 groups of 3 patients with their active family members and 4 groups of 5 patients with their active family members. Training was performed in Mustafa Khomeini Hospital (R.A.) in a room with sufficient light, quiet, calm, and with an entrance and exit door. The implementation steps of the model included four steps: 1. Perceived threat through group discussion (perceived sensitivity and perceived severity by increasing knowledge and awareness about the disease and its complications and treatment through group discussion), 2. Promotion Self-efficacy through group problem solving (practical encounter with the problem and problem-solving process, providing solutions and participation in choosing the best solution), 3. Increase in self-esteem through educational participation (using a sense of responsibility through education to an active member of the family), and 4. Evaluation in two methods of process and procedural evaluation (ensuring mental and practical participation in the care plan and necessary follow-ups, as well as the final evaluation after the intervention by completing the instruments again) (Table 1).

Table 1: Content of family-centered empowerment training sessions

Steps	Title	Content of the sessions
First	Perceived threat (2 sessions)	-Welcome, introduction, and familiarization with the program and the researcher -Familiarization with the group and its governing regulations -Providing information about the nature and process of the disease, prognosis, symptoms, the possibility of complications and consequences, prevention and treatment strategies -Providing explanations by the researcher about the necessity of doing chemotherapy and following the treatment plan -Encourage participants to discuss their experiences -Providing educational pamphlets with simple language explanations and illustrative images to participants
Second	Promotion of self-efficacy through problem solving (2 sessions)	-Reviewing the previous session -Using the problem solving or problem-solving process by group discussion method -Sharing experiences related to the disease and complications of chemotherapy -Providing solutions and participating in choosing the best solution, which could increase self-efficacy and self-control in become patients -Teaching practical skills to the patient and their active family members
Third	Increasing self-esteem through educational participation (1 session)	- Presentation of the material discussed in previous sessions based on the educational pamphlet through the patient to the active family member - Patient education in group sessions under the guidance and indirect supervision of the researcher - Training of active family member by the patient based on educational materials
Fourth	Process evaluation (during the intervention and two weeks after the intervention in 1 session)	- At the end of each session, to ensure learning of the presented material, a question and answer session was held for the intervention group - Two weeks after the intervention, by completing the relevant questionnaires for both groups

The duration of each session was 45-60 minutes according to the tolerance and participation of the group members.

It should be noted that educational content in the form of pamphlets was distributed among the intervention group in each session related to the subject under discussion. Two weeks after the completion of the intervention, we gave the GSE questionnaire and the RSE questionnaire to the patients of both groups. The control group received only routine ward care. To be ethical in the research, after completing the study, we provided a summary of the contents of the training pamphlets (Content prepared from the collection of educational pamphlets) to the patients of the control group.

Data analysis was done using Stata version 15 software. Descriptive statistics for quantitative variables were reported as mean (standard deviation) and for qualitative variables as frequency (percentage). The age of the participants was compared between the two groups using an independent t-test. Normality was checked using the Kolmogorov-Smirnov test. Chi-square test was used to compare qualitative demographic variables in the two groups. For comparison of the means of self-efficacy and self-esteem within and between groups, paired t-test and independent t-test were used, respectively. The significance level was considered less than 0.05.

Ethical approval was obtained from the Ethics Committee of Ilam University of Medical Sciences (IR.MEDILAM.REC.1401.142). Written informed consent was received from all participants. The confidentiality and anonymity of all participants were ensured. All participants had the right to withdraw at any time without penalty or effect on their treatment during the study.

Results

In this study, of the 97 cancer patients undergoing chemotherapy, 88 met the inclusion criteria and were divided into two groups (44 in the intervention group and 44 in the control group); they were evaluated and did not have any attrition. The mean age of the patients in the control and intervention groups was 44±10.9 and 46.7±11.4 years, respectively (P=0.22). There was no statistically significant difference between sex, marital status, educational level, and active member of family to help the patient in the intervention and control groups (P>0.05) (Table 2).

Table 2: Comparison of demographic characteristics between the intervention and control groups

Variables	Intervention Group	Control Group	P value*
	N (%)	N (%)	
Sex			
Male	11(25.00)	13(30.00)	0.63
Female	33(75.00)	31(70.00)	
Marital Status			
Single	6(13.63)	7(15.91)	0.81
Married	36(81.82)	36(81.82)	
Divorced	2(4.55)	1(2.27)	
Education Level			
Illiterate	9(20.45)	6(13.64)	0.85
Middle School	9(20.45)	10(22.73)	
Diploma	15(34.09)	17(38.63)	
Academic	11(25.01)	11(25.00)	
Active member of the family to help the patient			
Mother	9(20.45)	8(18.18)	0.99
Father	6(13.64)	5(11.36)	
Daughter	10(22.73)	10(22.73)	
Partner	12(27.27)	14(31.82)	
Sister	7(15.91)	7(15.91)	

*Chi-square test

Table 3: Comparison of the means of patients' self-efficacy and self-esteem scores in the intervention and control groups

Variable		Groups		P value**
		Intervention (Mean±SD)	Control (Mean±SD)	
Self-efficacy	Pre-test	51.73±9.77	51.72±10.55	0.43
	Post-test	55.04±9.34	42.14±6.39	0.001
P value*		<0.001	0.004	
Self-esteem	Pre-test	2.81±5.48	2.54±5.67	0.87
	Post-test	5.28±3.27	2.27±4.79	0.0005
P value*		0.0002	0.61	

*Paired t-test; **Independent t-test

Self-efficacy and self-esteem showed a normal distribution (P>0.05). The two groups did not reveal a significant difference in terms of self-efficacy mean in the pre-test phase (P=0.43). After the intervention, the mean score of self-efficacy in the intervention group was higher than the control group (P=0.001). In the pre-test phase, the mean score of self-esteem did not have a significant difference between the intervention and control groups (P=0.87). After the intervention, the mean score of self-esteem in the intervention group was significantly higher than that of the control group (P=0.0005) (Table 3).

Within-group comparison of the mean score of self-efficacy in the intervention group showed a significant difference (P<0.001). The mean score of self-efficacy post-test decreased compared to pre-test in the control group (P=0.004). Within-group comparison of the mean score of self-esteem in the intervention group showed a significant difference (P=0.002), but there was no difference in the control group (P=0.61) (Table 3).

Discussion

The present study was conducted to determine the effect of education based on the family-centered empowerment model on the self-efficacy and self-esteem of patients who were undergoing chemotherapy. According to the results of the present study, the training intervention based on the model had a positive effect on the self-efficacy of cancer patients who were undergoing chemotherapy two weeks after the intervention. The results of some studies showed the effect of family-centered empowerment training in improving the self-efficacy level of stroke survivors.[25-28] Also, the results of another study showed the effect of teaching the family-centered empowerment model on self-efficacy in patients with obsessive-compulsive disorder.[29] According to the results of this study and other research in this field, it can be concluded that implementing family-centered care increases understanding, family participation, and control over the individual environment; it also increases the patients' self-efficacy.

In the present study, the educational intervention based on the family-centered empowerment model had a significant effect in improving self-esteem in cancer patients who were undergoing chemotherapy about two weeks after the intervention. It can be said that the overall goal of the family-centered empowerment model is to increase the support and participation of patients' family members in their illness, and the emotional and instrumental issues.[15] The results of studies on the self-esteem of cancer patients who were undergoing chemotherapy also show that they need support and involvement from their families, as this can encourage them to undergo more chemotherapy sessions and keep them on the recommended chemotherapy drug regimen. When social support is provided by families, patients feel that still someone cares for them even if they are suffering; therefore, family involvement in treatment can increase their self-esteem.[30] The results of a study showed that the emotional, economic, and health functions in the families of cancer

patients undergoing chemotherapy play a role in improving their self-esteem; in the training of the family-centered empowerment model, these functions have also been promoted in the patients' families.[15] Therefore, the improvement of self-esteem level in cancer patients undergoing chemotherapy receiving this educational intervention is expected.

A better emotional feeling of the family towards the sick person causes a feeling of self-esteem among the patients. The results of some studies also showed that teaching the family-centered model had a significant effect on the self-esteem of patients with type 2 diabetes and thalassemia.[31, 32] In other words, the family-centered empowerment model, through the improvement and promotion of family functioning and their support in the form of emotional support, motivation, and encouragement for patients in order to manage the treatment of the disease, has led to the promotion of successful self-esteem in them.

This study focused on the effect of education based on the family-centered empowerment model on the self-efficacy and self-esteem of chemotherapy patients, which has been less studied. Among the limitations of the present study, the data obtained in this study were obtained through a self-report questionnaire, which has the possibility of bias in answering the questions. Another limitation of the research was the failure to consider the type of cancer in patients undergoing chemotherapy and its possible effect on the results of the study, which is suggested to be considered in future studies. Considering the short-term follow-up of patients in the present study (two weeks), it is necessary to conduct long-term follow-up (at least one month or more) in future similar studies to investigate the long-term effects on self-efficacy and self-esteem of cancer patients undergoing chemotherapy.

Conclusion

The training program based on the family-centered empowerment model has a positive effect on self-efficacy and improvement of the level of self-esteem in cancer patients undergoing chemotherapy. Therefore, it is recommended that the hospitals managers and treatment centers should take necessary measures for the training of the family-centered empowerment model program to promote self-efficacy and self-esteem in patients undergoing chemotherapy in a practical way by the nurses working in these centers. It is also suggested that, to achieve this goal, the nursing management of medical centers should help nurses through training courses, workshops, or in-service training courses to use the family-centered empowerment program for cancer patients undergoing chemotherapy.

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Authors' Contribution

MSF, MSh, MRB, LA designed the study. Data collection was conducted by MSF and MRB. LA did the data analysis. All authors drafted the manuscript, critically reviewed, and approved the final version of the manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis. The corresponding author attests that all listed authors meet authorship criteria and that no other inclusion criteria have been omitted.

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Conflict of Interest

None declared.

Declaration on the use of AI

The authors declare that no artificial intelligence (AI) was used during the writing process in this manuscript.

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