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Effect of Orem's Self-Care Model Training Program on Anxiety of Women with Breast Cancer: A Clinical Trial Study

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Abstract

Background: Breast cancer is the most common type of cancer and the second leading cause of death after lung cancer and is associated with numerous complications, including anxiety. It seems that organized educational interventions, such as Orem's self-care model, decrease the incidence of complications, such as anxiety.
Objectives: Therefore, the aim of the present study was to determine the effect of the self-care training program based on Orem's model on anxiety of women with cancer undergoing chemotherapy.
Methods: The present research was a clinical trial study conducted on 70 women with breast cancer, who had referred to educational hospitals of Zahedan, during year 2017. The convenience sampling method was used and data was collected using a demographic questionnaire, the Orem's need assessment form, and the Spielberger State-Trait Anxiety Inventory (STAI). Data were collected at baseline and four weeks after the end of the last intervention session. The intervention group received training sessions (three 25- to 30-minute sessions) based on the Orem's model, on a weekly basis, yet the control group did not receive any intervention except routine care.
Results: The results of statistical tests showed no significant difference between the two groups in terms of distribution of demographic variables, such as age, marital status, level of education, number of children, and occupation. The results of statistical tests also showed a significant difference between pre- and post-anxiety levels in the intervention group and there was no such significant difference in the control group ($P < 0.001$). Moreover, the results showed a significant difference between the two groups in terms of pre- and post-anxiety changes ($P < 0.001$). The results of comparing the two groups showed a lower post-intervention anxiety level in the intervention as compared to the control group, although this difference was not significant regarding trait anxiety (P: 0.62) and state anxiety (P: 0.017).
Conclusions: Orem's self-care model-based training program can reduce anxiety among patients with breast cancer and can serve as a self-care model for nursing care interventions in these patients.

Keywords: Anxiety, Breast Cancer, Orem's Self-Care Model

1. Background

Today, breast cancer is the most common type of cancer and the second leading cause of cancer deaths among the female community, with 1.67 million new cases diagnosed worldwide in 2012 (1), and 40,890 deaths due to its subsequent complication in 2016 (2). For this reason, it is one of the most important causes of health concern in females (3). Approximately 1.38 million new cases of cancer are diagnosed worldwide, with breast cancer accounting for 23% of the total number of cancers (4) and new cases are estimated to reach around 10 to 15 million by 2020 (5). About 12% of women will suffer from breast cancer during their lifetime in the United States (6). Breast cancer is also the most common malignancy among the female community in Iran, and accounts for 32% of female cancers (7). Breast cancer affects Iranian women at least one decade younger than women in developed countries, and the most prevalent age is 47 years old. Currently, there are about 40,000 women living with breast cancer in Iran (8). With an increase in the elderly population and life expectancy, as compared to the past, more cases of breast cancer are expected to occur in Iran in the future (9). Therefore, cancer has been recognized as a health problem of the last century due to its increasing prevalence and numerous negative effects on physical health (10). On the other

hand, breast cancer, as a kind of chronic disease, is associated with psychological complications, such as depression and anxiety associated with death anxiety, recurrence of disease, impaired body image, changes in the sense of femininity, and sexual activity (11). Anxiety is one of the most common complications reported among the affected women (35% to 65%), which is more common among other cancers. Furthermore, the prevalence of anxiety was reported to be 80% and 73% among patients undergoing surgical treatments and complementary therapies, respectively (2). A total of 76% of women reported moderate to severe anxiety in Snoj et al.'s study (12). Additionally, complications of cancer treatments, such as chemotherapy, resulted in impaired mental image, limited ability in establishing social interactions, and reduced family relationships, which in turn exacerbates anxiety (2). Today, cancer treatment primarily takes place at outpatient clinics and complications, such as fatigue, pain, nausea, sleep disturbance, depression, and anxiety can be reduced and level of performance, quality of life, and self-care be promoted by holding training programs in such centers (13). Many of these patients should manage the symptoms of the disease and complications at home and reduce distress symptoms to improve their level of performance and quality of life (14). Self-care promotion can therefore serve as a nursing goal for patients to improve their independence and avoid frequent hospitalization as well as reduce the high hospital costs (15). In this regard, a nursing model is a valuable guide for expressing the professional nursing care structure and can pave the way for nurses to review, measure, and evaluate the nursing care process (16). Dorothea Orem, one of the first self-care nursing model theorists, stated the role of nurses in three types of care systems based on patient's needs and conditions in health-deviation: Wholly compensatory nursing system, partly compensatory nursing system, and supportive-educative nursing system (17). In Orem's model, it is very important to stimulate self-care ability of patients and attract their participation in the self-care process. There are a few studies on Orem self-care model in cancer patients, which have only focused on the quality and quantity of their self-care behaviors and paid little attention to the self-care ability of these patients (18). Therefore, nurses can assign self-care duties to these patients by training on the basis of Orem's self-care model so that they reduce the cost of treatment and frequent hospitalization and improve their quality of life by increasing self-care ability in these patients (19). In a study on the effect of Orem's self-care on quality of life of muscular sclerosis (MS) patients, Ali Mohammadi et al. showed that the self-care program could lead to greater satisfaction from personal hygiene, sleep, rest, cognitive function, self-confidence, psychological, and mental improvement of the patient, and reduced anxiety and feeling of fear, and ultimately improved quality of life (20). Given the educational-supportive needs of women with breast cancer and their family, and the fact that breast cancer is one of the most prevalent cancers among the female society in Iran, special attention to this group of patients is of vital importance. It is thus necessary to teach these patients suitable strategies based on Orem's self-care model, in order help them deal with the disease experience and overcome the pathological aspects caused by diagnosis, treatment, and follow up. Regarding the fact that Orem's model self-care based training is a non-drug, non-invasive, and low-cost method for controlling physical and psychological problems and can be easily taught to the patients and their family by a nurse; the aim of the present study was thus to determine the effect of Orem's model-based self-care training on anxiety of women with breast cancer.

2. Methods

The present study was a quasi-experimental study (consisting of two groups) that was registered at the Ethics Committee of Zahedan University of Medical Sciences, with the ethics code of IR. ZAUMS.REC1396.334 on October 7th, 2018. The study population included 70 patients with breast cancer, who had referred to educational hospitals in Zahedan during year 2017 after carrying out necessary coordination with authorities of affiliated hospitals. Sampling was carried out using the convenience sampling method and inclusion criteria included being in the first chemotherapy course, age of above 18 years, the ability to communicate and collaborate, lack of metastasis, the absence of known psychiatric disease, and anxiety score ranging from 32 to 75 (moderate to severe anxiety) from the Spielberger State-Trait Anxiety Inventory (STAI), and having at least reading and writing literacy. Exclusion criteria also included one absence from educational sessions, incidence of metastasis during the study, patient death, and lack of patients' cooperation. A total of 35 patients were selected as the intervention group from Khatam Al-Anbia Hospital and 35 other patients were also selected as the controls from Ali Ibn Abi Talib Hospital during the period from February 20th, 2018 to May 22nd, 2018. Sample size was estimated as 32 individuals per group by using the sample size formula, according to Karimi et al.'s study (21), with 95% confidence interval and a test power of 80%. In order to increase the reliability and take into account the possible drop-out rate, the sample size was increased to 70 individuals (n = 35 pre-group).

$$n = \frac{\left(z_{1-\frac{\alpha}{2}} + z_{1-\beta}\right)^2 \left({s_1}^2 + {s_2}^2\right)}{\left(\bar{x}_1 - \bar{x}_2\right)^2} = 31.13$$

The data collection instrument composed of three parts. The first part included demographic characteristics, including age, marital status, occupation, economic status (family income level, poor income level (unable to pay basic living expenses), and average income level (able to pay basic living expenses), yet unable to pay for other expenses, such as travel etc., and a good income level, i.e. being financially secure), number of children, level of education, place of residence, and underlying disease. The second part included Orem's need assessment, which consists of 37 items and four domains, including therapeutic measures (items 1 to 11), nutrition (12 to 22), activity and rest status (23 to 30), and psychological problems (31 to 37). The third part also included Spielberg State-Trait Anxiety Inventory (STAI) that consists of four phrases and two subscales of trait and state anxiety. Each of these sub-scales consisted of 20 questions that measured state (current state) and trait anxiety (overall emotion) (22). The questionnaire was scored based on a four-point Likert scale, with scores one and four indicating no anxiety and the highest anxiety level, respectively. The possible score range was also 20 to 80. The validity and reliability of the above instrument were reported as 0.90 and 0.85, respectively (22, 23). High test sensitivity to the anxiety changes was also observed. The study method included the following three scheduled stages: Pre-intervention stage, intervention, and post-intervention stage. After referring to the oncology ward, the patients, who met the inclusion criteria, were gradually selected. The demographic form, Orem's need assessment form, and Spielberger State-Trait Anxiety Inventory (STAI) were completed by the patients after obtaining their consent form. Next, needs of each patient and patients' self-care ability was measured, and their limitations were specified. The researcher later outlined the most common diagnoses of patients and determined the goals, and designed the program accordingly. In this study, nursing diagnoses were related to the health deviation requisites, and the researcher firstly identified the type of need and implemented special training interventions, accordingly. Each patient received training based on standardized training protocols in three sessions of 25 to 30 minutes, on a weekly basis. The Orem's self-care-based training was conducted in a separate room with appropriate training conditions. The training was provided before chemotherapy using question and answer training approaches, face-to-face education, presentation, pamphlet, and educational booklet, the scientific content of which had been approved by oncology specialists. During the first session, the patient's care needs were identified and discussion was made on issues, such as the nature of the disease, treatment methods, complications, such as anxiety, and the importance of paying attention to these complications. The second and third sessions specifically focused on anxiety, necessity to pay attention to it, and strategies for controlling it, including Orem's self-care model, and the necessary training was provided individually, taking in account the patient's level of perception and education. Finally, the educational booklet was provided to the patient. Patients were followed up for four weeks of the program via phone calls on a weekly basis and attempts were made to ensure the implementation of the issues taught. Meanwhile, participants' questions were answered by giving them the researcher's phone number during the same time period. After completion of the four-week time period, the questionnaires were completed by the participants again. Finally, the materials presented to the experimental group during the three sessions were also taught to the control group. Data analysis was then carried out using paired *t* test and independent *t* test in SPSS version 21.

3. Results

A total of 70 participants completed the study in the experimental and control groups. The results of data analysis showed that there were no significant differences between the two groups in terms of demographic characteristics, such as age, marital status, level of education, economic status, occupation, number of children, place of residence, and underlying disease (Table 1). There was no significant difference between control and intervention groups in terms of mean state and trait anxiety before the intervention (Tables 2 and 3). The results of the statistical analysis indicated a significant difference in the intervention group in terms of pre- and post-intervention state anxiety, yet no such significant difference was reported in the control group. Also, the post-intervention comparison of the two groups showed a lower anxiety level in the intervention group than the control group, although this difference was not statistically significant (P: 0.62). The results also showed a significant difference between the two groups in terms of mean anxiety changes, suggesting a decreasing anxiety trend in the intervention group (Table 2). The results of the statistical analysis of the trait anxiety showed the same results as state anxiety, except that there was a significant difference between the two groups after the intervention, where the intervention group experienced lower level of anxiety (Table 3).

4. Discussion

In the present study, the self-care-based post-intervention anxiety level was significantly lower in the intervention group than the control group. Similarly, some similar studies showed results that were consistent with the current study. Zhou et al. showed in a study

Table 1. Comparison of Demographic and Clinical Characteristics of Women with Breast Cancer in the Intervention and Control Group[a]

Variable	Intervention	Control	P Value[b]
Educational level, y			0.49**
< 12	18 (51)	14 (41)	
12	7 (20)	11 (32)	
> 12	10 (29)	10 (29)	
Occupation			0.79**
Housewife	23 (65)	24 (68)	
Other	12 (35)	11 (32)	
Economical level			0.932**
Weak	15 (52)	14 (40)	
Medium	10 (28)	12 (35)	
Good	7 (20)	9 (25)	
Marital status			0.72**
Single	4 (12)	2 (6)	
Married	31 (88)	33 (94)	
Region			0.127**
Urban	20 (58)	19 (54)	
Rural	15 (42)	16 (46)	
Underlying disease			0.81**
Yes	17 (48)	16 (45)	
No	18 (52)	19 (55)	
Age	77.8 ± 41	2.8 ± 41	0.92***
Number of children	3.68 ± 2.6	4.02 ± 2.9	0.60***

[a] Values are expressed as No. (%) or mean ± SD.
[b] *, Fisher test; **, Chi-square test; ***, *t* test.

from China that the use of music-therapy and progressive muscle relaxation interventions was effective in controlling anxiety in women with breast cancer (24). Attai et al. showed that the use of educational videos was effective in controlling the anxiety level of patients with breast cancer, which was consistent with the results of the present study (25). It was also noted that patients can significantly control their anxiety symptoms in case of increased awareness and self-efficacy. Lien et al. also concluded that nursing education was effective in controlling anxiety and promoting self-care of women with breast cancer undergoing chemotherapy, which was consistent with the results of the present study (26); this indicates an improvement in the ability of these patients to control their anxiety symptoms. Christensen and Marck also reported in a study from the United States that their training course had a positive effect in reducing stress and anxiety symptoms in women with breast cancer (27). Zhu et al. also reported in a research from the Netherlands that the level of depression and anxiety were significantly reduced in patients with cancer receiving psychiatric care services (28). However, in some studies, such as that of Sloman, it was revealed that interventions, such as relaxation and imaging were not effective in reducing the anxiety symptoms of patients with advanced cancer (29), which is attributed to the lack of use of a high-sensitive scale; however, Spielberger scale was used in the present study to determine the patients' level of anxiety. One of the limitations of the present study included differences in mental and psychological characteristics, economic and family problems, and differences in motivation and interests of the participating patients, which affected their active participation in the training program. Although there are many studies on the impact of various educational interventions on the anxiety of women with breast cancer, the advantage of the current study was the use of Orem's nursing model-based training intervention, in which educational interventions and programs are based on specific needs of each patient. It should be noted that since education for patients with chronic diseases, such as breast cancer, has recently been addressed by health centers and researchers, few studies have examined the effects of organized education based on various models, such as Orem's self-care model. Recent studies have also confirmed the positive effects of training sessions on self-efficacy and management of chronic patients (30-32). Therefore, the results of the present study showed that one can use a care plan to help improve patient's living conditions and care process through workshops held by the hospital.

4.1. Conclusion

The results of the current study revealed that self-care based education for patients and attention to self-care needs of patients with breast cancer can reduce their anxiety. Considering the many negative consequences of anxiety on patients' quality of life, follow-up treatment, and adaptation to the disease and its complications, individualized training programs should be considered in the design of nursing interventions. Further studies with longer follow-up periods and similar studies on patients with cancer and chronic disease are also recommended.

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Table 2. Comparison of State Anxiety Before and after the Intervention in Two Groups[a,b]

Group	Before	After	Mean Changes	P Value
Intervention	50.02 ± 7.42	47.34 ± 7.26	-2.38 ± 3.04	< 0.001*
Control	50.28 ± 7.4	50.6 ± 7.84	0.314 ± 1.82	0.316*
P value	0.95**	0.62**	< 0.001**	

[a] Values are expressed as mean ± SD.
[b] *, dependent *t* test; **, independent *t* test.

Table 3. Comparison of Trait Anxiety Before and after the Intervention in Two Groups[a,b]

Group	Before	After	Mean Changes	P Value
Intervention	50.14 ± 6.16	47.00 ± 7.53	-3.14 ± 4.20	< 0.001*
Control	50.28 ± 6.09	51.11 ± 6.51	0.82 ± 1.56	0.057*
P value	0.98**	0.017**	< 0.001**	

[a] Values are expressed as mean ± SD.
[b] *, dependent *t* test; **, independent *t* test.

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Footnotes

Authors' Contribution: Masoud Jamshidzahe Dejange: Data collection, implementation of the project, and contribution to the compilation of the article; Fatemeh Kiani: Designing the research, and contributing to the compilation of the article; Seyed Mehdi Tabatabaei: Data analysis, and contributing to the compilation of the article; Mojtaba Tasbandi: Scientific editing of the article, and contributing to the compilation of the article.

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