Research Article

Effect of Orem Self-Care Program on Self-Efficacy of Burn Patients Referred to Ghotb-Al-Din-E-Shirazi Burn Center, Shiraz, Iran

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Abstract

Doing self-care behaviors and promoting them in patients with burn are important. Since self-efficacy is one of the key factors in promoting self-care behaviors, the present study has been conducted in order to determine the effects of Orem self-care program on the self-efficacy of burn patients. A randomized clinical trial study was conducted on 110 eligible burn patients. Patients were selected using simple random sampling method and were allocated randomly into two groups of experiment and control. The instrument for data collection was a questionnaire, containing demographic information and self-efficacy (SUPPH-29) questionnaire. The intervention consisted Orem's self-care program which was prepared according to the patients' needs. For the experiment group, 5 sessions of theoretical training and 75-90 minutes of practical training were accomplished. The self-efficacy of the patients with burns was assessed in three phases of (before, one month and two months) after implementing the self care program by the SUPPH-29 questionnaire. Data were analyzed in SPSS-17 using Chi-square test, Fisher's exact test, Independent t-test and repeated measurement multivariate test. a month and two months after the intervention, the mean of all dimensions of self-efficacy significantly improved ($p<0.001$). Also, the total mean of self- efficacy had improved from 66.91% in the first experiment to 76.76 % and 87.33 % in the next experiment after the intervention ($p<0.001$). But in the control group, the changes in the total mean and mean of all dimensions of self-efficacy, both in pre-and post-intervention phases, were not statistically signifcant ($P>0.05$). designing and implementing a self-care program based on Orem's model may improve the burn patients' confidence in doing self-care behaviours and as a result promote their self –efficacy.

Keywords: Orem self-care, Self-efficacy, Burn

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Introduction

Burns are *injuries* of the skin or other tissues caused by *thermal, chemical*, electrical or, *radiation and it* happens when energy is transferred from a heat source to the tissues (1). Burn in terms of frequency is one of the major health complications in any country. Burn annually brings death, morbidity and mortality, disability, and/or absolute isolation to many people (2). Studies conducted in the burn

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centers in Iran and other countries have shown that burn account for high prevalence among incidents (3). In the United States, it is estimated that each year about 1,100,000 people suffer from burn, of which 45,000 are hospitalized, and 4,500 die (4). Available statistics in Iran have shown that incidence frequency of 56,364 burn cases constitute a statistic of 5% of all recorded accidents in the country, and with the incidence of 1 in 1000, it is considered as one of the major causes of injury in the country (5).

Burn patients experience several physical, psychological, social and economic problems after being discharge from the hospital. Such as skin problems, scarring, pain, itching, stress, low self-esteem, anxiety, depression, posttraumatic stress disorder, lack of attention and support from family and friends and lack of financial support. Therefore these problems exert a catastrophic influence on various dimensions of these patients' lifes (6, 7, 8). Also clinical experiences of survivors indicate that burn is associated with traumatic stress and may cause permanent physical, psychological and mental changes in person. So, long-term hospital care along with multiple reconstructive surgeries and extensive rehabilitation measures are demanded (9, 10). Although rehabilitation interventions begin immediately after being hospitalized in the acute care unit, implementing programs in order to increase joint movements, self care and also ongoing counseling are crucial for burn patients. Moreover the patients need adaptation to the new situations such as doing homecare, changing the lifestyle and returning to the community (6, 11). Nurses have a key role in helping the burn patients to adapt to their new body image and the processes that lead to changes in their lives due to the injuries. Although many information about treatment and complications of burn have been provided in the form of brochures by the care providers who work with burn patients, the initial survey and interviews with patients and their families have demonstrated that patients seriously need further education on burn, its complications and self-care. The required self-care and trainings in this field have been confirmed in the study of Jang et al (8, 12).

In fact, any improvement in the treatment outcomes depends on the patient's ability to care for him/her and managing the consequences. Over 50% of hospital referral will be preventable if the patients can adequately care for themselves, accept the pharmacological treatment and participate in discharge program and social support (13). Nowadays evidences indicate that self-efficacy is one of the effective factors in the self-care of patients with chronic illnesses. Furthermore self-efficacy is prerequisite to behavior because it acts as an independent part of fundamental skills in people (14). Findings of Studies have announced that self-efficacy and self-care behaviors are the keys to successful outcomes and survival. Also self-efficacy and self-care behaviors come along with more compatibility, decreased physical and psychological symptoms, increased self-care behaviors and joy of life, and improved quality of life (15).

Low self-efficacy leads to tendency toward using negative ways and less utilization of treatment programs and services and therefore fail in decision making about the most appropriate treatment strategies. This would have a negative impact on disease progression and leads to more destructive behaviors (16).

Shakibazadeh (2010) also showed a positive and direct association between self-efficacy and self-care and 51% self-care behaviors was explained through self-efficacy and perceived barriers (17). Dishman et al (2005) also believe that self -efficacy is directly related to health behaviors and other determinants of social-cognitive variables (18). In fact, patients with higher self-efficacy participate more in self-care activities and accept treatment regimens better (19). One of the models that can contribute to self-care is Orem self-care model

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(20). Orem's Self-Care Model is a suitable clinical guideline for planning and implementing the principles of self-care and is used as a conceptual framework to guide self-care programs (21). Orem believes that health promotion and patients training are important parts of nursing duties. In this way she also believes that taking patients to independent level in daily activities, and elision of dependence to others are important roles of nursing (22). Due to lack of knowledge, motivation and skills in self-care and given that prevalence of burning is in the age range of 20-40 –the age that people can take the responsibility of taking care of themselves- thus performing self-care programs (that based on the Orem theory is designed to suit the needs of the patient) can strengthen the self-care power and prevent its wasting. Therefore the researchers decided to help the patients by their educational-supportive role and by designing and implementing programs based on Orem self-care model, increase the level of awareness, motivation, and skill to reduce the problems of patients and help them increase self-efficacy.

Methods

The present study is a randomized clinical trial in which the effect of application of Orem's self-care program on self-efficacy of burn patients admitted to the burn center of Ghotb-al-Din-e- Shirazi has been investigated.

Based on the findings of the previous studies (23) A total sample size of 104 and 52 for each group with the confidence interval of 95%, test power of 90%, was determined. Considering the attrition rate, 8 individuals were added in each group and finally 60 patients were considered for each group. It is worthy of mention that at the time of application, 4 patients from the experiment group and 6 from the control group were excluded due to lack of willingness to continue their participation. Therefore, the study was performed on 110 subjects (56 in the experiment group and 54 in the control group). Inclusion criteria were the age range of 18-60 years, willingness to participate in the research, Persian literacy of reading and writing, no record of certified mental illness and mental retardation, and other chronic diseases, access to telephone for following-up the program, having at least 10% body burns, after discharge from the hospital to complete rehab, and at last participation in all training sessions. Exclusion criteria were death, incidence of stressful Events during the research (besides the burn), patients' reluctance to continue working with the researcher for any reason and participation in any other training or counseling.

The researcher based on the literature review and in order to design a self-care program using a standard form of Orem assessed the needs of the patients and then the educational content, based on the Orem educational-supportive system, was designed and the pamphlets were provided. The days and hours of training classes were set according to the opinions of the samples in the experimental group.

The purpose of self-care program was self-care of the studied units on the principles of proper nutrition and diet, proper use of medications, pain management (pharmacological and non-pharmacological), burned skin and the wound, dressing, methods to compensate for the inability to adjust temperature, exercise and physical therapy programs, uttering the changes in feelings about self-image, ways to promote coping with the changes, strengthening the ability and enhancing of self-esteem, using relaxation techniques, providing mental health and sexual relations (in married patients), which all were provided based on the literature review and the results of the Orem survey form.

To orient the patient on the "self-care", it was important to provide the necessary trainings in the mentioned areas. So, the researcher attended the clinic on Saturday to Thursday both morning and afternoon and presented the self-care program to the experimental group subjects and his/her attendant. The program

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included a five-session theoretical and practical training in the form of class basis for 75 to 90 minutes of lecture, demonstration, practical implementation of health care, group discussion, cooperative learning, answering the questions, in groups of 3 to 5 individuals for five weeks (one session every week). The attendant was the patients' closest family member who could involve and guide the patient in the self-care at home and could participate in all training sessions along with the patient. The attendant had a supporting role and could help the patient to regain and promote independence. Each training session was prepared according to the education and understanding level of the participants and their needs by using training aids such as slides and posters to justify them fully. Moreover, at the end of each session, a booklet or pamphlet and muscle relaxation training CD that contained all the points in the training sessions to refer to them in the case of oblivion were provided for the patients and their attendants. The patients were asked to apply the compiled program for 2 months. Based on the subjects' needs and the study objectives, necessary consultation was provided for the patients in order to gain enough knowledge and skills for self-care. In order to follow how the subjects care for themselves based on the training sessions in the previous two months, a weekly self-report checklist including the adjustments that the patient required to comply was provided for the samples. Also, at the end of each month they were checked when they referred to the center for getting a new checklist and delivering the old ones. The checklists were completed by the patients. The ways to complete the self-care checklists were taught in the last session. The researcher monitored the patients in the experiment group via phone calls and in-person consultation once every 15 days. During the study patients' questions were answered, their problems were considered and they were given advice and support for better care.

Then, one month and two months after the end of the training, the self-efficacy questionnaire was filled in by the help of the researcher assistant through interviewing the cohorts. At the end of the intervention, in order to comply with the ethical considerations of the study, the instruction manual containing the materials provided in the training sessions was given to the control group and if they requested necessary guidance it was performed as well.

Demographic questionnaire consisted of two parts: the first part contains demographic characteristics of age, sex, marital status, education level, employment status and the second part contains burn information including burns percentage, length of hospital stay , time since injury, site of burn and cause of burn.

In order to determine the validity of the demographic questionnaire consisted of burn details, in addition to reviewing the literature and references, opinions of 10 expert professors of Shiraz Medical and Nursing School were taken into account and they were employed after final approval.

Self- efficacy Questionnaire: the new version of (SUPPH-29) questionnaire was a 29-item self-reported instrument which measures self-efficacy in 3 dimensions of positive attitude (16 questions), stress reduction (10 questions) and making decision (3questions). All the questions in this questionnaire were on 5-point Likert scale from very little to quite a lot (with 1 very little and 5 quite a lot). So the maximum score was 145 and the minimum score was 29. Questions of 1-10 measured stress reduction, 11-13 making decisions and 14-29 positive attitude. In this questionnaire the total score of self-efficacy was calculated based on the scores of all the questions. Likewise for each dimension, Higher scores reflect better outcomes. Based on the scores, the self-efficacy of samples was categorized in one of three categories of high, medium and low. The validity of the questionnaire was confirmed in the study by Owen & Lev (2001) and its

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reliability in the dimensions of positive attitudes, stress reduction, and decision making was estimated 0.92, 0.89 and 0.83 respectively using Cronbach alpha coefficient (24). Furthermore, in a study in Shiraz, Iran, the content validity of the questionnaire was confirmed and its reliability was estimated 0.91 using Cronbach alpha coefficient for the entire questionnaire. In that study alpha for stress reduction, decision making and positive attitude was reported 0.79, 0.8 and 0.87 respectively (25).

After the protocol was approved by the research Ethics Committee of the University with regard to moral considerations, the researcher referred to the Ghotb-al-Din-e-Shirazi Burn Center and after permission from the hospital authorities, and 120 subjects based on the inclusion criteria and using easy sampling method were selected. Then after giving the necessary explanation about research objectives, a written informed consent was obtained from all the participants. Next for random assignment of the subjects to the experiment and control groups, random allocation card was used. In this way, cards with numbers from 1 to 120 were provided and by using random number table, all the samples were assigned to two groups. Then, again by using a random number table, one group was selected as the control group and the other group as the experiment group. After that an assistant researcher who was fully trained in how to complete the questionnaire by presenting and introducing herself to the patients and getting the Written informed consent form helped them fill out the demographic and self-efficacy questionnaires through interviewing both the experiment and control groups. The current study, was part of an Msc thesis in medical surgical nursing approved by shiraz University of Medical Sciences, Iran, registered in the Iranian Registry of Clinical Trials (IRCT ID: IRCT2013042112129N1). Finally the data were statistically analyzed in SPSS (version 17) and by using Chi-square test, Fisher exact test, Independent t-test and repeated measurement multivariate test in three phases. The significance level was considered 0.05 in this study.

Results

Chi-square test, Fisher's exact test and Independent t-test showed no significant differences between demographic and burns variables of the two groups including age, gender, marital status, education level, employment status, percentage of burn, length of hospital stay, time since injury, cause of burn and site of burn.

The results showed that from the 110 patients participated in this study the mean age of patients in the experimental group was 28.05± 5.69 and that in the control group was 26.74±5.78. In terms of sex, men outnumbered women in the both group – in the experimental group (62.5%) and in the control group (63%) were male. Most patients in the experimental group (67.9%) and in the control group (70.4%) were married. Education level of the subjects was as follows: guidance school and diploma (53.6 percent) for the experimental group and guidance school and diploma (64.8%) for the control group. In terms of employment status, most subjects in the experimental group were housekeeper (32.1%) and self-employed (32.1%) and in the control group most subjects were housekeeper (29.6 %). Average percentage of burn in the experimental group was 26.17 ± 5.16 and that of the control group was 25.59 ± 5.59. Average length of hospital stay in the experimental group and the control group was 20.39 ± 12.42 and 19.03 ± 11.31 days respectively. And the average time since injury in the experimental and control group was 75.58 ± 37.90 and 82.03 ± 55.17 day respectively.

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Table1. Comparison of the mean of self- efficacy scores in the studied units at pre-intervention

Group Dimensions of Self-efficacy	Experiment (56) Mean ± SD	Control (54) Mean ± SD	p
Stress reduction	21. 35±4.06	20.12±5.01	0.160
making Decision	7.78±1.94	8.20±1.74	0.238
Positive attitude	37.76±5.57	35.96±8.51	0.190
Total score	66.91±9 .72	64.29±12.78	0.229

Cause of Burn on most of the subjects in the experimental group (89.3%) and that of the control group (77.8%) was heat sources. In terms of site of burn, hands were the most organs burnt in the experimental group (78.6%) and the control (90.7%).

According to the results of the table 1 before the intervention, the mean total score of self-efficacy and average scores of the three dimensions of self-efficacy in the cohorts based on the independent t- test was not statistically significant ($p>0.05$) and the two groups were similar in this respect before the intervention. Based on the results in Table 2 it can be seen that not only the time ($p<0.001$) and group($p<0.001$) were significant factors for changing the self-efficacy total score but also the result of the interaction of Time / Group also confirmed the differences in the total score of both groups ($p<0.001$).

This means that increase in the sum of self-efficacy score in the experimental group was greater than that of the control group. But it is noteworthy that the increase was not statistically significant in the control group.

Also, Table 2 shows the results of repeated measurement multivariate test based on the replication in three dimensions of self-efficacy in burn patients in the experiment and control groups over time. Based on the results of this table it can be seen that time ($p<0.001$) and group ($p<0.001$) were significant factors for change in self-efficacy scores dimensions. Moreover, the results of the time/group interaction can reveal the effectiveness of intervention in the experimental group ($p<0.001$).

Table 2. Comparison of the mean change in total scores and the self-efficacy dimensions of the subjects during the study period in both experiment and control groups

Self-efficacy dimensions	Time Groups	Before intervention		1 months after intervention		2 months after intervention		Time Time/group		Group
		Mean	SD	Mean	SD	Mean	SD	P		
Stress reduction	experiment	21.35	4.06	24.58	4.49	27.82	4.30	>0.001*	>0.001*	>0.001*
	Control	20.12	5.01	20.90	4.82	20.83	4.54			
Decision making	experiment	7.78	1.94	10.05	1.87	11.87	1.82	>0.001*	>0.001*	>0.001*
	Control	8.20	1.74	8.29	1.73	8.50	1.91			
Positive attitudes	experiment	37.76	5.57	42.12	5.09	47.64	5.54	>0.001*	>0.001*	>0.001*
	Control	35.96	8.51	36.64	7.02	36.59	7.10			
Total score experiment		66.91	9.72	76.76	9.97	87.33	9.75	<0.001*	<0.001*	<0.001*
Control		64.29	12.78	65.85	11.73	65.92	11.90			

* P values lower than 0.05 are statistically significant

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This means that increase in the mean score of the three dimensions of self-efficacy in the experimental group was greater than that of the control group. In the stress reduction dimension**,** in a month post- intervention in comparison with pre-intervention there was an increase of 3.23 points in the experimental group and in two months post- intervention in comparison with pre-intervention there was an increase of 6.47 points. Whereas in the control group in a month post- intervention in comparison with pre-intervention there was an increase of 0.78 points and in two months post-intervention in comparison with pre-intervention there was an increase of 0.71 points. In making decisions dimension, in a month post- intervention in comparison with pre-intervention there was an increase of 2.27 points in the experimental group and in two months post- intervention in comparison with pre-intervention there was an increase of 4.09 points. Whereas in the control group in a month post- intervention in comparison with pre-intervention there was an increase of 0.09 points and in two months post- intervention in comparison with pre-intervention there was an increase of 0.3 points. In positive attitude dimension, in a month post- intervention in comparison with pre-intervention there was an increase of 4.36 points in the experimental group and in two months post- intervention in comparison with pre-intervention there was an increase of 9.88 points. Whereas in the control group in a month post- intervention in comparison with pre-intervention there was an increase of 0.68 points and in two months post-intervention in comparison with pre-intervention there was an increase of 0.63 points. So, Increase in all the dimensions was not statistically significant in the control group.

Discussions

The results have shown an increase in the self-efficacy of burn patients in the time intervals of before to two-months after the interventions. This shows the effectiveness of intervention on the self-efficacy of the experiment group, while no significant changes have been observed in the self-efficacy of the controls.

Based on the results of the current study it was revealed that the mean total score of self-efficacy in the subjects pre- intervention was equal to 65.62 (66.91 in the experimental group and 64.29 in the control group) which demonstrate the low self-efficacy in the burn patients.

In the study by Smaeli et al entitled “The Quality of life and self-efficacy of the patients under Hemodialysis” this questionnaire was used and the score of greater than 90 was considered as high self-efficacy level, 67-90 was considered medium self-efficacy and under 67 was considered as low self-efficacy (26). Low self-efficacy leads to tendency toward using negative ways and less utilization of treatment programs and services and therefore patient with low self-efficacy fail in decision making about the most appropriate treatment strategies. This would have a negative impact on disease progression and leads to more destructive behaviors (16). For this reason, precautions such as: training, support and empowerment of these patients in order to become able to deal with these problems should be taken. In this study by using self-report checklists which was prepared for the subjects follow up based on the training sessions and included the adjustments that the patient required to comply , the patient's level of confidence in doing things and achieving the targets was evaluated. Also by follow up and encouragement, the self-efficacy of patients was enhanced.

The little increase in mean total score of self-efficacy and average scores of the three dimensions of self-efficacy in the control group in spite of intervention could be related to gaining experiences in taking care of them and getting information from physicians and clinicians.

The presented results are consistent with those of some studies in this field. In a study conducted by Azizi Fini et al (2011), entitled

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"The effect of health-promotion strategies education on self-care self-efficacy in patients with bone marrow transplantation" it was shown that there existed a statistically significant difference in the mean of self-efficacy scores of pre-intervention and one month post-intervention in the experimental group. However the difference in the mean scores of the control group was not significant (15).

In another study by Baljani et al (2012) entitled "The effect of education on promoting self efficacy in patients with cardiovascular disease" it was demonstrated that self-efficacy improvement interventions had a positive effect on the total score of self-efficacy in patients with cardiovascular disease (27). However it is important to have in mind that their study was a quasi-experimental study with before and after one group but the present study is a clinical trial study with two groups of experimental and control to present the results with more reliability.

The results of the clinical controlled trial study of Tasy et al (2002) entitled "Empowerment of patients with end-stage renal disease "showed that self-efficacy in the experimental group relative to the control group has significantly improved (28).

The results of other studies also have shown that if rehabilitation programs along with training are performed for patients with chronic obstructive pulmonary disease, it may lead to an increased long-term self-efficacy in the patients (28). The presented results are consistent with those of other studies in this field (30, 31, 32, 25).

In the present study, better examination of self-efficacy dimensions post-intervention has shown that self-efficacy in the experimental group relative to the control group has a greater mean of score and as a result patients experienced fewer problems in the experimental group. The results are consistent with those of some studies in all the dimensions of self-efficacy. For example, in the study of Zaman-Zadeh et al (2008) entitled "The effect of empowerment program on self-efficacy in diabetes patients in Tabriz University of Medical Science Diabetes Education Center" it was shown that the experimental group after the intervention in all three dimensions of self-efficacy together (p= 0.003), and each dimension in isolation {psychosocial-social diabetes (p =0.001), assessing dissatisfaction and readiness to change (p= 0.002), setting and achieving diabetes goals (p= 0.002)} had statistically higher scores than those of the control group (32). Also In the study of Baljani et al has shown that the scores of all the subclasses of self-efficacy had significantly increased one month after the intervention (27).

But in the study of Ebrahimi (2009) entitled "The Effect of Empowerment on Quality of Life, self-efficacy, clinical &Lab Indicators of patients under Hemodialysis Treatment "the results showed that the two groups had significant differences in overall score of self-efficacy and making decisions ($p<0.001$ and $p<0.001$) but in terms of stress reduction and positive attitude the difference was not significant ($p>0.074$ and $p>0.06$). Generally insignificancy of the two above mentioned dimensions was attributed to the small sample size because the sample size in his study was estimated based on QOL (25).

Also, the results of the study of Azizi Fini etal has announced that the self-efficacy scale was increased in general comparison as well as adaptability, decision-making and stress reduction parameters in experimental group with respect to the control group and also at post compared to pre-intervention in both groups ($p<0.001$). In terms of the joy of life dimension, as one of the dimensions of self-efficacy, no significant differences between the two groups has been observed (p=0.247). The researchers believed that patients' perception on the life quality and enjoyment can be influenced by many factors including economic status, individuals' cultural

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conditions and disease progression or no progression (15).

The results of the present study has shown that implementation of Orem self-care program based on the self-care needs of burn patients can increase patients' confidence in performing self-care processes and consequently improve the self-efficacy in patients. Furthermore it can be anticipated that increase in patients' self-efficacy brings about improvement in treatment outcomes and decrement in hospitalization and treatment costs (15). The results of the study of Kara and Asti have also demonstrated that self-care strategies education contributes to decrement in the frequency of respiratory problems in patients with chronic obstructive lung disease through enhancing self-efficacy (29).

It can be argued that high self-efficacy in doing a particular behavior strengthen the desire to perform, continuity and follow-up of that behavior over time. In other words people with stronger self-efficacy and greater expectations seek desirable outcomes and perceive barriers as difficulties that have to be overcome and therefore they consider self-care more. Self-efficacy directly through motivations and effective goals make a ground for health promoting behaviors and indirectly through perceived barriers and determined level of commitment or consistency, affects motivation (14).

Summary of research suggest that the self-efficacy of burn patients who participated in the self-care program was significantly higher than that of those who did not. This result is due to the careful design and implementation of appropriate care plans tailored to the needs, interests and problems of these patients. Therefore, designing a self-care program based on the patients' needs and its implementation as part of a treatment program with the aim of reducing complications and problems arising from this incident is suggested.

Limitations and Recommendations:

Since in the present study due to time limitations the effect of Orem self-care program has been evaluated in the short term, therefore, a secondary study is suggested to be implemented for assessing the impact of Orem self-care program on the patients in this study in a longer period of time (approximately six months after the intervention) to determine the stability of these interventions. Also, by considering the inclusion criteria of this study, care should be taken in generalization of the results to people outside the research population.

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