



The Impact of Self-care Education Based on Orem's Model on Self-care Behaviors of Patients with β -Thalassemia Major: A Clinical Trial

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Abstract

Background: Thalassemia negatively affects key aspects of life and self-care behaviors. It is essential to promote self-care behaviors in patients with thalassemia in order to improve their functions and mitigate adverse effects.

Objectives: In this context, the present study aimed to investigate the effects of self-care education on self-care behaviors of patients with major β -thalassemia based on Orem's model.

Methods: This clinical trial investigated 60 patients with major β -thalassemia who had been admitted to Razi Hospital in Saravan, southeast of Iran, in 2017. The subjects were selected and randomly allocated to the control and experimental groups. A demographic questionnaire and a researcher-made self-care scale were used to gather data. The experimental group received individual- and group-training for 5 sessions of 30 to 45 minutes, while the control group was presented with routine instructions. After one month, the questionnaires were completed again and the data were analyzed in SPSS 23 using chi-square test and independent *t*-test.

Results: The results of this study showed that administering the self-care program enhanced three aspects of self-care, including mental health, physical activities, and therapeutic measures in patients with major β -thalassemia, but no improvement was observed in terms of nutrition after the intervention ($P = 0.28$).

Conclusions: It is promising to undertake self-care interventions to improve self-care behaviors of patients with major β -thalassemia.

Keywords: Self-Care Education, Orem's Self-Care Model, Major B-Thalassemia, Self-Care

1. Background

Thalassemia is one of the most widespread genetic disorders in the eastern Mediterranean regions and Iran. In this regard, Sistan and Baluchestan Province has the highest prevalence rate ($n = 2,800$) in Iran (1-5). Owing to its chronic nature and the need for frequent treatment necessitating multiple referrals to medical centers (1, 6), thalassemia can cause unfavorable effects on the quality of life and self-care ability of affected individuals (7). Self-care is a major concern and one of the research priorities in nursing. In this regard, the National Institute of Nursing Research highlights self-management of symptoms in chronic patients (8). It should be clarified that self-care education is an interactive process, which comprises a set of activities for raising awareness or cultivating new skills to improve self-care behaviors (9). In chronic diseases, education is part of a program that involves the patient in

actively taking care of himself/herself. Today, the patient education is considered less important than clinical interventions, and educational programs are unfocused and perfunctory; hence, it is crucial to provide suitable conditions for patients to take care of themselves (9). If properly taught, self-care could be exercised on a personal basis without professional assistance. In this regard, Orem's self-care model is one of the most comprehensive clinical approaches (10). Nowadays, using nursing patterns, which are based on patients' abilities and needs, is an important factor in improving their quality of life (11). Orem's model concentrates on the ability of the individual to take care of himself/herself and defines the role of the nurse as one of identifying self-care defects and providing nursing services based on diagnosed deficiencies. Care is defective when it does not correspond to patients' requirements (12). Orem's model has been performed on diverse

patients having heart, kidney, diabetic, and asthma diseases, and its positive effects on these people have been established (13-17). As mentioned above, the chronic nature of thalassemia causes many care-related problems (1, 18), all of which could deteriorate patients' quality of life (18). In this context, promoting self-care could help to resolve many of these complications.

2. Objectives

The purpose of this study was to explore the effects of Orem's self-care model on self-care behaviors of patients with major β -thalassemia admitted to Razi Hospital in Saravan, southeast of Iran, in 2017.

3. Methods

After receiving the code of ethics (ZBMU.1.REC.1396.112), the authors conducted this clinical trial (2017) at the thalassemia Ward of Razi Hospital (Saravan) on patients with major β -thalassemia. The inclusion criteria included the willingness to participate in the project, having medical records in the thalassemia ward of the target hospital, age between 13 and 17 years old, having reading and writing literacy, and attending the self-care sessions. The exclusion criteria, on the other hand, included patient's death, hospitalization during the intervention, travel, being absent from the training sessions even once, incomplete filling the questionnaires or failure to complete them.

Based on the study by Masoudi et al. (19) and the following formula as well as a 95% confidence interval and a power of 90%, the sample size in the present study was estimated at 18 for each group. To take account of possible drop, the sample size was increased to 30 members for each group.

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 (S_1^2 + S_2^2)}{(\mu_1 - \mu_2)^2} \quad (1)$$

The samples were randomly divided into the experimental and control groups. A vase containing balls marked with odd and even numbers was used to specify the group of each participant. The patients picking even-numbered balls were assigned to the experimental group, while those taking odd-numbered balls were placed in the control group. A demographic questionnaire was used to collect personal characteristics (age, gender, education, residence, economic status) of patients. Additionally, to assess self-care behaviors of the participants, a researcher-made questionnaire was used, including 40 items scored based on a 4-point Likert scale. This instrument covered

therapeutic measures (13 questions), nutrition (14 questions), physical activities (6 questions), and mental health (7 questions). The scores of this questionnaire ranged from 40 to 160, with higher marks displaying greater self-care. Test re-test method was used to determine the reliability of the questionnaire. Then the correlation between the results was analyzed in two stages ($r = 0.84$). The questionnaires were completed before and one month following the intervention. In the first stage, using Orem's self-care model, care needs of the experimental group were identified in three areas: universal self-care requisites, developmental self-care requisites, and health deviation self-care requisites. In the second stage, the nursing diagnosis was established with respect to patients' individual requirements. Then the nursing system appropriate for patients was determined. In the present study, the participants were exposed to the supportive-educative system of nursing in which the patients can learn and take care of themselves, but this is not possible for them without the assistance of the nursing system. The role of a nurse or researcher in this system is counseling and correcting self-care defects (20). The self-care intervention in the current study was carried out based on Orem's self-care model and the specific needs and self-care defects of each patient. Next, five individual- and group-sessions (30 to 45 minutes a session) were organized using lectures, PowerPoint slides, and educational videos. In the end, a booklet and compact disc containing educational videos, photographs, and pictures were given to the experimental group and they were followed up for one month. During this period, patients in the experimental group were twice contacted over the phone in order to assess their self-care conditions, answer their possible questions, and make necessary clarifications. After one month, they filled in the self-care questionnaire again. Apart from conventional care services, the control group was provided with no particular instruction. Data were analyzed in SPSS 23 using chi-square test and independent t -test. $P < 0.05$ was considered statistically significant.

4. Results

Based on the findings, 60% of the participants were female. The mean and standard deviation of the participants' age was $13.5 \pm 1.8\%$. Considering literacy and economic status, the majority had primary school education (46.7%) and an average income (46.7%). Besides, most patients (45%) lived in the city. No statistical difference was observed between the two groups in terms of demographic variables of age, gender, education, economic status, and residence (Table 1).

Table 1. Demographic Characteristics of the Subjects in the Experimental and Control Groups^a

Variable	Experimental	Control	P Value
Age, mean \pm SD	13.44 \pm 1.77	13.66 \pm 2.02	0.63*
Gender			0.11**
Female	15 (50)	9 (30)	
Male	15 (50)	21 (70)	
Education			0.47**
Primary school	8 (26.7)	10 (33.3)	
Secondary school	13 (43.3)	15 (50)	
Below high school	9 (30)	5 (16.5)	
Economic status			0.10**
Low	8 (26.7)	16 (53.3)	
Average	17 (56.7)	11 (36.7)	
Good	5 (16.7)	3 (10)	
Residence			0.12**
City	10 (33.3)	11 (56.7)	
Suburb	9 (30)	8 (26.7)	
Village	11 (36.7)	5 (16.7)	

^aValues are expressed as No. (%) unless otherwise indicated.

The results showed no significant difference between the mean scores of self-care before the intervention in the two groups; however, this score differed significantly in the two groups after the self-care program, showing the experimental group had a higher score than the control group. More particularly, the two study groups were significantly different in terms of mental health, physical activities, and therapeutic measures. Nevertheless, no such variation occurred in the nutritional status of the two groups after the intervention (Table 2).

5. Discussion

The results of this study demonstrated a significant improvement in the self-care behaviors of patients with thalassemia after implementing the intervention based on Orem's self-care model. This is consistent with the observations of Karimi et al. (21), Altay and Cavusoglu (14), Shahbaz et al. (15), Kusnanto et al. (22) and Hakimi et al. (23), which examined Orem's model of self-care on the self-care behaviors of patients with cancer, asthma, diabetes, and postmenopausal symptoms, respectively. In particular, the results of the current research suggested that the intervention could significantly enhance three dimensions of self-care, including physical activity, mental health, and therapeutic measures; however, this difference was not significant in terms of nutrition. In this regard, Karimi et al. (24)

and Aish and Isenberg (25) studied the impact of Orem's model of self-care on the nutritional status of patients with colorectal cancer and myocardial infarction, respectively. They reported a statistically significant improvement in nutritional behaviors of the subjects after the intervention. This is not compatible with the results of this study, which could be due to different living conditions of the present study population. Madmoli et al. confirmed the positive effect of Orem's self-care model on the mental health of patients with major thalassemia through reducing the psychological complications of the disease (26). Similarly, Khodaveisi et al. supported the favorable impact of Orem's self-care model on the mental health of patients with multiple sclerosis (27), which is in agreement with the results of the present study. Altay and Cavusoglu noted the beneficial impact of Orem's model on physical activities and adherence to therapeutic regimens and other related prescriptions in patients with asthma (14). This is inconsistent with the results of the present study, insofar as nutrition is concerned. To explain this discrepancy, one may consider the suggestion made by Pouraboli et al. (28), which articulates that self-care activities of patients with thalassemia are affected by living conditions, public awareness, and social support. Thus, in addressing self-care behaviors of a particular population, it is necessary to take account of these three issues in order to evaluate self-care interventions more accurately.

Therefore, it is recommended that further studies should be undertaken to help patients with thalassemia acquiring self-care skills and consequently, improve their welfare, functional abilities, and disease process. This is especially required among teenagers in high population areas.

5.1. Conclusions

The results of the study indicate that education based on Orem's self-care model can substantially raise the level of self-care in patients with major β -thalassemia. Considering the importance of self-care, the use of this model is strongly recommended in order to better provide health services to patients, especially those with chronic diseases.

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Table 2. Comparison of the Four Dimensions of Self-Care After the Intervention in the Experimental and Control Groups^a

Stage	Group		Independent t-test		
	Experimental	Control	t	df	P Value
Therapeutic measures					
Before the intervention	30.60 ± 6.25	30.23 ± 6.20	0.22	58	0.82
After the intervention	37.8 ± 5.01	32.03 ± 4.9	0.64	58	< 0.001
Physical activities					
Before the intervention	13.60 ± 3.02	14.30 ± 2.75	0.66	58	0.35
After the intervention	17.4 ± 3.2	14.6 ± 2.4	4.56	58	< 0.001
Nutrition					
Before the intervention	34.26 ± 4.67	37.70 ± 4.96	2.75	58	0.008
After intervention	40.4 ± 5.7	40.1 ± 3.3	0.24	58	0.80
Mental health					
Before the intervention	12.13 ± 1.97	12.43 ± 1.47	0.66	58	0.50
After the intervention	17.4 ± 6.2	13.4 ± 1.1	3.52	58	0.001
Total score of self-care					
Before the intervention	90.60 ± 10.99	94.66 ± 9.78	0.63	58	0.23
After the intervention	113 ± 14.3	100.1 ± 7.5	4.39	58	< 0.001
Self-care changes before and after the intervention					
	22.5 ± 11.17	5.4 ± 12.8			0.001

^aValues are expressed as mean ± SD.

Footnotes

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