The Effect of Orem's Self-Care Model on Quality of Life in Patients with Migraine: a Randomized Clinical Trial

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Abstract- Many aspects of the lives of migraineurs are commonly affected by the condition, including occupational affairs, social and family life, responsibilities and ultimately the quality of life. This study was designed to determine the effect of orem's self-care nursing model on quality of life in patients with a migraine. This study was carried out in Tehran, Iran. According to the pre-post design of the randomized clinical trial, 88 patients were selected. After obtaining approval from the ethics committee of the Baqiyatallah Medical Sciences University's Research Deputy; Patients who signed the informed consent aged 20-55 years and without any more disease or disability affecting the quality of life were selected and randomly assigned to a group. Data collection tools were a demographic questionnaire, general health survey short form (SF36), and Orem cognition form and self-care checklist. Self- care model were held as four 30-45 minutes training sessions based on self-care deficit needs for the experimental group. The quality of life scores was measured in two stages, before and three months after intervention then were compared in both groups. Data were analyzed with statistical software SPSS and use of descriptive analysis tests, *Chi*-square, Mann-Whitney u and Wilcoxon. The final analysis was performed on 43 experimental and 40 controls. No significant difference was detected in the two groups in terms of demographic variables ($P>0.05$). All dimensions of quality of life including physical functioning, physical role limitation, body pain, general health, vitality, social functioning and emotional role limitation and mental health in the experimental group showed a significant increase after intervention compared to the control group ($P<0.05$). It was concluded that performing Orem's self-care nursing model improves function and overall quality of life and reduces the high cost of a migraine and migraine-related disability to individuals and society.
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Acta Med Iran, 2016;54(3):159-164.

Keywords: Migraine headache; Headache; Orem self-care model; QOL; Nursing; Self- care

Introduction

A migraine is a common debilitating disease with the prevalence of 5-8% in men and 11-16% in women (1). This disease is more prevalent among ages 25-55 years i.e. the climax of youth and productivity (2,3). Migraine headaches have considerable negative effects on people's quality of life. The reason is that, after migraine attacks, people often need to stay in bed, and this interferes with their occupational functioning, the ability to perform household tasks, maintain family and social relations, and enjoying leisure time (4-6). Due to the unpredictable nature of these headache attacks, most people worry about their rest and the incidence of inter- periodic attacks. The headache-related disability on one hand, and patients' anxiety for the incidence of next headache attacks (Cephalalgiaphobia) on the other cause people to overuse sedatives, which in turn makes the ground for the incidence of recurrent headaches and decreased the quality of life (5-8).

Treatment demands made, and indirect cost caused by reduced productivity of patients with a migraine are considerable and exceeds that of those who are not afflicted with such disease (4). Based on previous studies, the annual total cost paid by an employed patient with migraine is almost $2800, more than the amount paid by other employees with no migraine (5,6). Such costs mainly arose from absence from work

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and reduced productivity caused by the headache which consequently doubles migraine headaches in people with economic difficulties (9). Therefore, considering the chronic nature of a migraine and its significant negative effects on patients' quality of life, social activities, and economic life requires special attention to be paid on these patients' self-care (9). Self-care involves activities performed by people to maintain health, relieve symptoms of the disease, and prevent from the disease (10). Doing self-care activities increases patients' awareness and self-confidence and develops self-efficacy. In this respect, patients reach a satisfactory balance between self-care and improved occupational productivity and social-familial relationships (3). Thus, involving migraine patients in self-care activity is an important part of a comprehensive migraine treatment. This kind of treatment empowers patients to better control headache symptoms and reduce costs and migraine-related disability (2).

The Orem's Self-Care nursing model is one of the models that involve patients in self-care activity appropriately. According to Orem (2001), self-care is an important component of treatment for the chronic illness that the individual initiates and performs on one's own behalf in maintaining health, welfare and well-being (11,12). Orem Self-care nursing model describes nursing systems in three categories: wholly compensatory, partly compensatory, and supportive-developmental (11,13). The supportive developmental (formerly supportive educative) nursing system is applicable for patients with chronic diseases seeking to improve their self-care (2,10,11).

According to a patient with migraine age and their ability for taking the self-care responsibility, performing the self-care model in the form of a supportive developmental nursing system that has been designed regarding self-care needs, can best improve patients' self-care ability and quality of life. In this regard, the present study was conducted to determine the effect of Orem self-care model on migraine patients' quality of life.

Materials and Methods

This study was carried out in Tehran, Iran. Based on a pre-post design of the randomized clinical trial, 88 patients were selected. After obtaining approval from the ethics committee of the Baqiyatallah Medical Sciences University Research Deputy; patients who signed the informed consent were selected and randomly assigned to a group with simple randomization method. The instruments used for data collection included a demographics questionnaire, a general health survey short form SF-36, the Orem cognition form and a self-care checklist. The inclusion criteria included having migraine headaches based on indexes of the International Headache Society, belonging to the age range 20-55 years, and the minimum ability of reading and writing. The exclusion criteria involved failure to perform the intervention properly and patients' unwillingness to continue to participate in the study.

After the initial preparation, participants in both groups completed the demographics questionnaire and the SF-36. Then, the control group received only usual treatment of the clinic, and the experimental group performed the self-care model, which is based on self-care deficit needs, besides receiving the usual treatment. Orem's Self-Care nursing model in the experimental group underwent the following three steps:

First step: The experimental group completed the Orem's identification and assessment form to assess and identify a migraine and determine self-care needs for designing the self-care model. The self-care needs pertaining to migraine recognition, nutrition, activity, stress control methods, and sleep improvement were determined.

Second step: Regarding the first step, the self-care model was designed in three respects nutrition, exercise, and relaxation (to control stress and improve sleep) in the form of an Orem's supportive-developmental nursing system. The designed program included getting familiar with the nature of a migraine, the following diet properly; daily walk at least for 30 minutes, and doing progressive muscle relaxation technique at least for 20 minutes in the morning and at night.

Third step: Teaching the self-care program within four theoretical and practical sessions of 30-45 minutes. Individual and group sessions were held for patients in the experimental group per week for one month. The self-care checklist was given to the patients at the end of each session (to follow up the performance of the program) patients were taught how to complete the checklist prior to this step of the study. The completed checklists were tabulated monthly, and the research unit had to check the related option if the program was followed or put a negative sign next to the related option if the program was not followed. At the end of the fourth session (last session of the theoretical training), the patients were provided with a training manual and were requested to follow the self-care program and record their own actions in the

checklist for three months to improve their quality of life. Meanwhile, the researcher controlled performance of the intervention in the experimental group in person or by telephone and answered patients' questions during the three months besides following up the intervention in the clinic.

Finally after three months, the self- care checklists of the experimental group were collected, and the short form SF36 was completed personally by the experimental and the control group again.

Regarding the non-normal distribution, the data were analyzed using non-parametric tests such as Chi-square, Mann-Whitney U, and Wilcoxon wherever necessary in SPSS software. Statistical significance was set at $P<0.05$.

Results

During the study, one patient in the experimental group and four patients in the control group were excluded from the study due to their unwillingness to continue the study, and in total, 83 patients remained in the process of the study.

Most of the patients under study were in the 20-30 age range, 73.5% of whom were female. The Chi-square test did not show any significant difference between the two groups in terms of demographic variables ($P>0.05$), which indicated the homogeneity of the groups (Table 1).

Table 1. Demographic characteristics of migraine patients in the two groups

variables		Experimental frequency (%)	Control frequency (%)	*P.* Value
Age (years)	20-30	13(30.2)	21(52.5)	0.08
	31-40	11(25.6)	11(27.5)	
	41-50	18(41.9)	7(17.5)	
	Top 50	1(2.3)	1(2.5)	
Sex	Female	31(72.1)	30(75)	0.8
	Male	12(27.9)	10(25)	
Education	Propaedeutic	6(14)	3(7.5)	0.62
	The Diploma	22(51.2)	21(52.5)	
	Bachelor's Degree or higher	15(34.8)	16(40)	
Marital status	Single	6(14)	11(27.5)	0.17
	Married	37(86)	29(72.5)	
Occupation status	Homemaker	26(60.5)	16(40)	0.14
	Employee	11(25.5)	13(32.5)	
	Other jobs	6(14)	11(27.5)	
Economic status	Weak	2(4.7)	2(5)	0.76
	Moderate	33(76.7)	28(70)	
	good	8(18.6)	10(25)	

(Table 2) shows the comparison of the components of quality of life scores in patients with a migraine prior to the intervention and three months later in the experimental and the control group. The results indicate that after the intervention the components of quality of life scores in the experimental group overran those of the control group, and Mann-Whitney U test showed a significant difference in this regard ($P<0.001$).

Moreover, Wilcoxon test showed a significant difference between the components of quality of life scores before the intervention and after the intervention in the experimental group ($P<0.001$). The total mean score of quality of life in the experimental group before and after the intervention increased from 49.23 ± 15.80 to 87.16 ± 8.07, which was statistically significant as compared with that of the control group ($P<0.001$).

Table 2. Comparison of quality of life scores before and after the study in the two groups of patients with a migraine

Group SF-36 Subscale		Experimental Mean± (SD)	Control Mean± (SD)	P-Value
Physical functioning	**Before**	72.62±(20.33)	71.62±(25.50)	0.92
	After	97.09±(4.25)	57±(22.26)	0.001*
Role-physical	**Before**	35.46±(31.91)	40±(32.42)	0.52
	After	94.18±(14.26)	17.50±(26.67)	0.001*
Bodily pain	**Before**	30.90±(18.86)	40.15±(19.08)	0.02
	After	75.76±(16.07)	23±(12.06)	0.001*
General health	**Before**	51.60±(20.36)	5.57±(3.77)	0.38
	After	83.48±(12.37)	34.47±(19.77)	0.001*
Vitality	**Before**	51.74±(18.05)	52.50±(15.73)	0.84
	After	80±(10.52)	41.87±(14.44)	0.001*
Social functioning	**Before**	58.11±(19.8)	61.52±(20.17)	0.43
	After	87.27±(15.53)	45.25±(16.73)	0.001*
Role-emotional	**Before**	36.37±(36.28)	41.65±(38.36)	0.52
	After	94.62±(12.32)	16.62±(26.16)	0.001*
Role limitation due to emotional problems	**Before**	58.04±(18.46)	61.50±(17.78)	0.38
	After	84.46±(8.82)	52.70±(16.19)	0.001*
General health perceptions	**Before**	48.25±(16.16)	51.82±(14.88)	0.30
	After	86.06±(7.98)	34.55±(13.51)	0.001*
Mental health	**Before**	51.18±(17.56)	54.42±(16.33)	0.38
	After	86±(8.96)	38.22±(14.25)	0.001*

*$P<0.005$

Discussion

The total mean score of quality of life after performing Orem's self-care model in the experimental group increased significantly as compared with that of the control group. Buse *et al*.,'s study on numerous scientific documents in PubMed during 1970 to 2008 concerning the effect of a migraine on disability and quality of life concluded that the best recommendation for patients with a migraine is to maintain the appropriate healthy lifestyle, especially at the time of intense headache attacks. They introduced a healthy lifestyle in patients with a migraine containing a regular sleep-wake schedule, following a regular diet and exercise, and avoiding headache-stimulating food (5).

In the present study, evaluation of the nutrition self-care checklist after the intervention showed that 88.4% of the studied patients could manage their headache attacks and reduce the disability caused by a headache through following a proper diet, keeping regular meals especially breakfast, and avoiding headache-stimulating food. In conformity with the aforementioned results, studies by Lemstra in Canada and Smith in Washington on the effect of a training intervention in patients with a migraine revealed a significant decrease in number and severity of headache attacks after the intervention in the experimental group (14,15)

Walking and relaxation programs were designed based on the positive results of various studies performed across the world on the effect and significance of aerobic exercise and stress management techniques on reduced headache attacks and subsequently improved quality of life. In this regard, Koseoglu *et al*.,'s study (2008) showed that aerobic exercise increased plasma beta-endorphin level, hence an increased pain threshold in patients with a migraine and reduced number and severity of headache attacks (16). Varkey *et al*.,'s study in Sweden proved that aerobic exercise increased maximal oxygen uptake considerably, reduced headache attacks, and improved quality of life significantly (17). Moreover, results of the studies conducted separately in Germany and Austria showed that aerobic exercise and relaxation practices reduced stress and anxiety of patients with a migraine and consequently, prevented and controlled headache attacks and improved quality of life (18,19).

In harmony with the results of the above studies, results obtained from the evaluation of exercise and relaxation self-care checklists in this study showed that 90.7% and 88.7% of the patients in the experimental group accepted the daily walking and relaxation exercises as a self-care behavior, respectively, and they were walking for 30 minutes at specific hours of the day (which were determined by the patients) and doing

relaxation practices in the morning and at night. During the follow-ups performed by the researchers, many patients were instructed to take the relaxation practices as a method for relaxing themselves. They stated that the relaxation practices, especially before sleeping, prevented invasion of distressing thoughts and preoccupations, which contributed to a comfortable sleep. This enabled them to start the next day with more energy and vitality.

Given that most of the patients accepted the 30-min daily walk and relaxation exercises in the morning and at night as a self-care behavior and that the results showed a significant increase in the quality of life, the researchers are in a position to argue that the self-care model containing exercise and relaxation proved successful in improving the patients' quality of life by reducing attacks and disability caused by headaches.

The results of the present study confirm results of many studies performed within Orem's self-care model. In this regard, Rosmawati *et al.*,'s study on "The Evaluation of Supportive-Developmental Nursing Program" on self-care practices of persons with Type 2 diabetes showed that mean scores of total and subtotal self-care in the experimental group were significantly higher than those in the control group (11). Furthermore, Hamedanizadeh's study revealed a significant decrease in headache indexes in the experimental group after performing Orem's self-care program (20). Rostami's study also showed that the training of the Orem's self-care pattern to the elderly in the experimental group increases the quality of all aspects of their life (21).

Engaging patients in active self-care is an important component of a comprehensive migraine treatment. Orem's self-care model will lead to positive results in a reduction of disability, saving treatment costs, and an increase in quality of life if the model is designed on the basis of patients' self-care needs and cognition level.

Acknowledgment

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