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Effect of an Orem Model "Family-Centered Empowerment" Program on Self-Care of Brain Stroke Patients

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Abstract

Aims: Due to the long-term disabilities following stroke, these patients need to achieve acceptable self-care. One of the conceptual models of nursing care that can empower patients is the Orem self-care model. Therefore, this study aimed to investigate the effect of a program called "Family-centered empowerment " based on the Orem model on the self-care of brain stroke patients.

Materials & Methods: This is a two-group experimental study carried out on 64 patients with stroke referred to Ayatollah Kashani Hospital affiliated with Isfahan University of Medical Sciences in 2020-2021. The data collection tools included a checklist of personal and clinical characteristics with four items (age, gender, level of education, occupation) and the Barthel index for activities of daily living (ADL).

Findings: No significant difference was observed between the two groups in age, history of stroke, history of other chronic diseases, and level of self-care behaviors ($p>0.05$). A significant difference was observed in the self-care score between the intervention and control groups two weeks after the intervention ($p<0.005$). The average self-care score in the intervention group was significantly higher than in the control group.

Conclusion: The Orem self-care method helps the nursing community, policymakers, and planners as an effective program for empowering and increasing the efficiency of brain stroke patients.

Keywords

Self-Care [https://www.ncbi.nlm.nih.gov/mesh/68012648];
Empowerment [https://www.ncbi.nlm.nih.gov/mesh/2030829];
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Introduction

Stroke is the third most common cause of death after heart disease and cancer, which cause about 5.5 million deaths worldwide yearly [1]. Appearance and function of the body change due to the paralysis by the acute or chronic types of the disease. The paralysis also leads to disruption in daily activities and self-care [2-4]; therefore, stimulating the self-care ability of these patients and planning based on this potential is particularly important [5, 6].

In other words, improving self-care and managing daily activities in affected people, especially in the physical dimension, is significant, considering the long-term disabilities due to the stroke [7]. "Self-care" is necessary to cope with stressful events and causes non-dependence in the patients [8, 9]. According to Sating *et al*., improving self-care behaviors empowers patients to manage their lives and roles after a stroke [9], control their lives, handle their social performance, and improve their quality of life [10, 11].

Meanwhile, the family is a social institution helping the patient obtain an acceptable level of self-care. There are many changes in the dimensions of life, which are difficult to control without the support of family and society after a stroke; in other words, family life is essential to every person's health. Regarding its importance and role for the patient, it should be considered as important as the patient in the nursing intervention program. Accordingly, the care environment includes patients and their families, and general care includes family and patient care [12]. Based on the studies, only a small share of chronic diseases, including stroke, are cared for and treated by specialized staff. The main contribution of disease management is the responsibility of the patient's family. So, taking into account the strong relationship between the health of the patients and their families, involving the family in reaching the maximum level of ability can be very effective. In addition, a significant part of the care of these patients is conducted at home; therefore, the role of the family cannot be ignored [13-15]. In this regard, Chenery *et al*. point out that one of the most important factors affecting the failure to rehabilitate these patients is the inactivity of the family [16].

Orem's self-care model is one of the nursing conceptual models with a considerable impact on empowering the family and raising the level of self-care. This model is one of the most complete theories of self-care, providing a clinical guide for evaluating patients' self-care deficiencies and implementing self-care principles for nurses, patients, and their families [17]. In other words, Orem introduced three systems in nursing, including a full compensation system, partial compensation system, and educational support system, which, depending on the conditions of the patients in the educational support system, the patients would be able to meet their self-care needs and the nurse acts as a source of support, guidance, and encouragement. Since the needs assessment of patients helps to make some decisions, in this system, the nurse will be able to control the behavior of patients and gain knowledge and skills about their illness. In this system, the nurse is responsible for support and guidance and may act as an independent, dependent, or consultant [18].

In general, Orem considers the goals of self-care training to preserve and maintain physical and mental function, establish integrity and coherence in functions, and human evolution within the framework of necessary conditions for life. Therefore, the model has attracted the attention of many researchers in the clinical field. For example, Wang *et al*. found a relationship between hospital infections and daily activities in the control and intervention groups based on the Orem model ($p<0.05$). So, implementing programs based on the Orem model showed reduced hospital infection rates and increased daily life activities in the intervention group [19]. Yan *et al*. also investigated the effect of edema patterns on stroke patients' self-care ability and quality of life. They found a significant difference between the intervention group (care based on the edema pattern) and the control group after the intervention ($p<0.05$) so that in the intervention group (care based on the Orem pattern), self-care ability and quality of life were significantly higher than the control group [20].

In general, due to the many physical and mental complications in stroke patients, the length of the treatment process, the need for family participation as the main caregivers of patients at home, and considering the limitations of the studies for investigation of the effect of the implementation of the family-oriented empowerment program on the self-care of stroke patients, this research aimed to investigate the effect of the family-oriented empowerment program based on the Orem model on the self-care of stroke patients.

Materials and Methods

This is a two-group experimental study carried out on 64 patients with stroke referred to Ayatollah Kashani Hospital affiliated with Isfahan University of Medical Sciences in 2020-2021.

The data collection tools included a checklist of personal and clinical characteristics with four items (age, gender, level of education, occupation) and the Barthel index for activities of daily living (ADL). The Barthel index includes 100 items that evaluate the abilities to control defecation (4 options; 0-1 point; two points with 0 point); control of urination (2 options; 0-5 points; two options with 0 point and two options with 10 points), personal hygiene (2 options; 0-5 points), using the toilet or basin (3 options; 0-10 points), eating (3 options; 0-10 points), moving from bed to chair (4 options; 0-15 points), mobility (4 options; 0-15 points), dress up (3 options; 0-10

points), stair climbing (3 options; 0-10 points), and bathing (2 options; 0-5 points). Each item is in a dependent (zero points) to independent (highest points) range, and the scores assigned to the options have a 5-point interval. The overall score is between zero, which indicates complete dependence on physical performance, and 100, which indicates complete independence. The validity of the questionnaire has been confirmed by Qavami *et al*. [11]. The reliability of the tool has been confirmed by calculating the Kappa coefficient of 0.96 and Cronbach's alpha coefficient of 0.827 [20].

The research team developed and implemented the program using the nursing process according to Orem's model to achieve the purpose of the study, which consisted of a compilation of the family-centered empowerment program based on Orem's model [20]:

1. Current situation assessment stage: Assessing the current situation is a multi-dimensional process and fundamentally addresses the question of " should an action be taken for the self-care of patients? If the answer is yes, how? In this regard, the results of the research background indicate self-care deficiencies in stroke sufferers [2]. Therefore, developing a program to empower family caregivers to achieve self-care for stroke patients is necessary.

2. Aim setting: the general aim of this study was to investigate the effect of the family-centered empowerment program based on the Orem model on the self-care of stroke patients referred to selected hospitals of Isfahan University of Medical Sciences.

3. Determining strategies, activities, and resources: The problems, complications, and needs of the patients were extracted based on the review of the research background [6], and the provided solutions for each of the problems were predicted (Table 1).

4. Overview of the designed operational plan: This step aims to review the designed operational plan to determine whether the program is feasible and effective in practice. For this purpose, using the required care measures and the RAM technique regarding the program content's concept, usefulness, relevance, and practicability, the content was selected per the texts and applied the opinions and suggestions of experts and studies. For final approval, it was presented to the group of experts, consisting of 10 experts in the field of patient care and treatment, who were interested in having experience in this field. The RAM technique was used to reach a consensus among the experts. Therefore, after a comprehensive review of available information sources, a list of the considered items (in other words, the draft of the program components) was prepared in a table and presented to the group members. They were asked to comment on each action (regarding usefulness, relevance, and feasibility) on a scale of 1-9. A score of one means increased harm of the action and a score of 9 means increased benefits of the action. In this method, an average score of 5 means that the disadvantages and benefits of the action are equal. Then the researcher reviewed the given scores and calculated the average scores for each measure separately, and the "family-centered empowerment program on self-care of stroke sufferers based on the Orem model was compiled and finalized.

Table 1. Strategies for empowerment of the family for self-care of stroke sufferers based on the Orem model

Problem	Solution
Difficulty walking, sitting, and using assistive devices	Teaching the patient and the family about short-term standing and sitting methods, training walking with a walker or cane, training stair climbing, performing exercises within the range of motion of the joints, and teaching them to the patient's family members physiotherapy of patients and alarming the patient's family about the risk of bedsores
Fecal incontinence	Training the patient and family in the field of bowel movement control in the patient
Urinary incontinence	Teaching the patient and family in the field of urination before rest, fluid intake during the day and its limitation during sleep time, Encouragement to defecate half to an hour after eating
Problem with bathing	Expressing the importance of muscle massage with lukewarm water, continuous physiotherapy, and attending caregiver in bathing the patient
Difficulty speaking, reading, and writing	Teaching, use of educational pamphlets
Problem with performing daily life activities	Training the patient and family about bathing and dressing, brushing teeth, using the toilet, taking off clothes, and putting on pants in the patient
Problem in eating	Teaching the patient and family about empowerment techniques related to eating in the patient
Skincare and bed sore prevention	Training the patients and their families about skincare and bed sore prevention
Problems with mobility	Educating the patient and family in connection with joint range of motion exercises in a passive manner

5. Plan implementation: After applying comments and adjusting the draft, the operational plan was implemented in the neurology department of Ayatollah Kashani Hospital as a clinical trial study and then evaluated by Bartel's checklist. This was a combined training program, so a session (before discharge) was held in the presence of family caregivers through individual and face-to-face training. The training was held for 1 to 1.5 hours. Then two sessions were prepared and arranged as an educational package based on the latest materials and resources related to stroke care.

Then the researcher introduced himself/herself to the patients and their families and talked about the details of the study and answered the patient's possible questions, invited them to enter the study, and obtained their written consent to participate in the research. the needs of the test subjects were

assessed based on the Orem model using the Barthel model, and the care needs of each patient were extracted. The first training session started before the discharge of the patient. The demographic and clinical data were measured by the Barthel questionnaire before the discharge of the patients in the control group. In the last stage and after learning the taught items correctly, the studied units were allowed to implement the taught self-care methods at home for two weeks.

6. Evaluation of program results/impact: To evaluate the intervention results, the Barthel questionnaire was filled out two weeks after the intervention by the subjects of both groups.

After the approval of the research by the Ethics Committee of Isfahan University of Medical Sciences, the researcher referred to Ayatollah Kashani Hospital in Isfahan by submitting an introduction letter from Isfahan Nursing-Midwifery School and obtaining permission from the authorities. At first, the researcher selected qualified people to enter the study and provided them with an informed consent form and the purpose of the research. Before any intervention, the subjects filled out the demographic questionnaire and the Barthel index for activities of daily living (ADL) by the questioning method. Then the researcher randomly placed the patients in two intervention and control groups. The inclusion criteria were a definitive stroke diagnosis by a neurologist, the ability to perform self-care, training in the range of 3 and 4 based on the Ranken criterion, lack of a history of hospitalization due to mental disorders, and cognitive disorder.

Findings

The research units' mean age and disease duration were 70.06±12.30 and 3.01±0.90, respectively. Also, most of the subjects were female (53.5%), married (55%), with an elementary education level (48%). Most of the caregivers of the patients were their spouses (80%) and with a diploma or lower education level (80%; Table 2).

Table 2. Comparison of demographic characteristics between control and intervention groups

Parameter	Control	Intervention	p Value
Patient	72.20±11.44	68.02±11.44	p>0.05
Caregiver	40.31±2.44	39.42±3.01	p>0.05
Gender			
Female	18 (56.25)	16 (50)	0.67
Male	14 (43.7)	16 (50)	
History of chronic disease			
Yes	16 (65.60)	17 (50)	0.13
No	16 (15.69)	15 (18.71)	
History of previous stroke			
Yes	12 (75)	14 (81.30)	0.12
No	20 (25)	18 (18.70)	

No significant difference was observed between the two groups in age, history of stroke, history of other chronic diseases, and level of self-care behaviors (p>0.05). A significant difference was observed in the self-care score between the intervention and control groups two weeks after the intervention (p<0.005). The average self-care score in the intervention group was significantly higher than in the control group (Table 3).

Table 3. Comparison of empowerment scores in the control and intervention groups before and after the intervention

ADL	Intervention	Control	Independent T-test
Before	44.08±19.30	42.83±12.97	0.39
After	83.06±20.99	57.66±19.40	0.03
Paired T-test	0.001	0.001	

Discussion

This study aimed to investigate the effect of the self-care training program on the empowerment of stroke patients based on the Orem model. The results showed a significant difference between the empowerment scores of patients in the test and control groups after the intervention. In other words, the implementation of the self-care training program in the patients of the test group has caused a significant increase in the empowerment of the patients compared to the average empowerment of the patients in the control group. Therefore, based on the results, self-care training has effectively empowered patients. The findings of this study were in accordance with the findings of Wang *et al*., which showed a significant difference between the hospital infection and daily activities in the control and training groups based on the designed training program using the Orem model (p<0.05); generally, the implementation of a training program using Orem model cause the decrease of hospital infection and increase of daily activities in the intervention group [17]. The findings of Yan *et al*. showed a significant difference between the intervention and control groups after intervention (p<0.05) so that the self-care abilities and quality of life in the intervention group (based on the Orem model) were higher than the control group.

The important objective of education is to create healthy, correct, and lasting behaviors, and care continuity is valuable for the patients. Therefore, self-care activities with active educational methods and a comprehensive understanding of the patient can effectively promote desirable health behaviors. On the other hand, understandably, presenting content based on individual needs can be useful in achieving better results, and most importantly, it is effective in continuing self-care behaviors. Accordingly, in this study, taking into account the needs assessment in the control group, the patients' educational needs were extracted, which increased the training's effectiveness. Ashvandi *et al*. showed that training methods based on the Orem self-care model can improve patients' self-care abilities with implantable cardioverter defibrillators.

Implementing a care program with different models can provide a suitable operational framework for

doing high-quality stages of planning, implementation, and evaluation, especially the Orem self-care model, which is a globally recognized model. Therefore, its use in chronic diseases such as stroke and Amy can help the nursing community, policymakers, and planners as an effective program and model in empowering the efficiency of patients.

Conclusion

The Orem self-care method helps the nursing community, policymakers, and planners as an effective program for empowering and increasing the efficiency of brain stroke patients.

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Ethical Permissions: In this study, ethical consideration has been followed according to the ethical protocols of the studies. The ethics codes have been received from Isfahan University of Medical Sciences with the ethics code of IR.MUI.RESEARCH.REC.1399.584. In addition, written consent was obtained from all study participants after stating the study's objectives for them.
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