The impact of self-efficacy on self-care ability of patients with stroke: a clinical trial study

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Abstract: Introduction: Stroke is a really stressful event which brings about various physical, psychological, social and economic problems that affects different aspects of the patient's life. Therefore, this study is conducted to investigate the impact of a self-efficacy program on self-care ability of patients with stroke. Materials and methods: This study was conducted as a clinical trial which includes two group and three stages with a test plan before, immediately after and one month after stroke occurrence. 50 patients with stroke, whom were hospitalized in neurology department of Kashani Hospital in Isfahan city, were selected by simple continuous method and were placed randomly in two groups of test and control. Patients of test group were divided to 5 groups of 5 people and the self-efficacy program was implemented for them in 6 sessions. Then, Barthel questionnaire was completed for both groups before and after the intervention and one month after the intervention and the results were analyzed statistically by using descriptive and inferential statistics and software of SPSS version 18. Results: The results of independent t-test showed that the mean scores of self-care before the intervention was not significantly different in two groups (P = 0.30), but immediately after the intervention (p = 0.02) and 1 month after the intervention (P <0.001), was significantly higher in test group compared to the control group. Analysis of variance with repeated and LSD post hoc test showed that the average score of self-care for patients in the intervention group had a significant difference between the three time interval (P <0.001). While the average score of self-care of patients in the control group didn't have significant difference between the three time interval (P =0.11). Discussion and conclusion: The results show that deployment of self-efficacy program can improve self-care behaviors in stroke patients despite the various problems which the patients have.

Key words: self-efficacy, self-care, stroke, clinical trial

INTRODUCTION

Despite all of its progresses, medical and health technology can't prevent completely human exposure to different diseases and their side effects,

Therefore, today, chronic diseases are considered a major problem in the world and the most common chronic disease is nervous system problems, including strokes [1] so that about 15 million people around the world suffer from it annually [2]. More than 690 thousand people in the United States [3] and 152 thousand people in Great Britain are infected to it annually [2]. This disease has become a major health problem in the Middle East, and it is estimated that deaths, which is caused by it, will double by 2030 [4]. In Iran, about 150 to 160 thousand people catch the disease annually which about 15% of patients die and about 70% of them suffer from permanent disabilities [5].

In addition to high rates of mortality, stroke is the second cause of long term disability and it is considered a very important event in the lives of patients which it will lead to physical, functional and psychological changes in them [4 and 6] and this issue will lead to a loss of human and social resources; therefore, the disease has become one of the most serious health problems [7].

However, the impact of self-care on improvement of health outcomes and costs reduction has been proved in various studies. Studies have shown that only development of training content for patients and even implementing training courses for patients can't lead to self-care, also a self-management system must be deployed for the management of health problem [8]. Therefore, systems which provide care services require programs that no only help the enhancement of physical disorder but also lead to the enhancement of the

created condition and improve the life quality [9]; including self-care programs which can be the basis of many self-management programs [10].

Self-efficacy is considered as the main concept of Bandura's cognitive-social theory, in many education and health improvement patterns. Self-efficacy is the degree of confidence which is created in the person and lead to his ability to do his daily living activities [11] as well as mood, emotional state (anxiety, depression) and life quality changes [12].

The study results showed that discharged patients with high self-efficacy will have better performance in daily activities compared to patients with low self-efficacy [13] and they will overcome better on the obstacles that face in daily life [14] and consider a higher goal for themselves and expect better occurrences [15].

The existence of a correct understanding of advantages and usefulness of self-care and its obstacles can motivate more the patients to do self-care behaviors. So it is very important that patients and health care providers know better the importance of proper self-care behaviors and perceive its benefits and barriers better [16] because loss of deployment of proper methods to enhance self-care activities will lead to loss of patients' independency and increase of dependency to others, decrease of satisfaction and decline in their life quality [17].

Due to the high prevalence of stroke and the importance of nursing duty to protect public health and enhance life quality and with respect to necessity of implementing a self-efficacy program to promote self-care activities in them, this study is conducted to investigate the effect of a self-efficacy program on the self-care ability of people with strokes.

MATERIALS AND METHODS:

This study is a two groups and three stages clinical trial research with a test plan before, immediately after and one month after the intervention.

After conducting a library research and gaining scientific credibility and reliability of the data collection tools, the researcher takes an introduction letter from the School of Nursing and Midwifery, Isfahan University of Medical Sciences, and goes to neurology department of Kashani hospital and explains the research goals and attracts the cooperation of authorities to conduct the research. Then 50 qualified patients for sampling, who had the criteria to enter the research, were selected by simple continuous method and were placed equally in two groups of test and control by a random assignment method.

The study population included all patients with stroke that has been on the verge of hospital discharge and has also had the following characteristics:

The infection to stroke for the first time, willingness to participate in the study, aged between 50 and 70 years, lack of addiction to alcohol and drugs, lack of simultaneous participation in another study, no loss of consciousness level, capable of responding to questions and getting scores more than 23 from the Mini-Mental State Exam, having self-care ability and earn scores above 50 from Barthel index, having at least literacy to read and write, the ability to understand conversation in Farsi and lack of malignant physical illness. The absence of more than 2 times in meetings, not wanting to continue the intervention, the incidence of new diseases that cause more disability in these patients, are considered as exclusion criteria.

Researcher goes to the bedside of patient and introduces himself and explains the research details and answer his questions, and receives his written consent to participate in the study. Then, the patients in test group was divided into 5 groups of 5 people and sessions with identical content will be held for all participating groups **[Table 1].**

MMSE is a simple screening tool that provides an overall estimation of the cognitive situation of the subjects and contains 110 questions in seven field of recognizing time, recognizing location, remembering three words, attention and calculation, recall three words, sight and speech structures. The total score is 30, and the score less than 23 indicates cognitive impairment. Score between 24 and 30 showed lack of cognitive impairment, score between 18 and 23 showed the presence of probable or mild cognitive impairment and score equal or less than 17 indicate a deep and severe cognitive impairment.

Barthel tool is used to evaluate the self-care ability and covers the measurement of the 10 basic aspects of activities and movements related to self-care activities, such as eating, personal hygiene (bathing), make-up, dressing, bowel and bladder control, using the toilet, transferring from bed to chair and vice-versa, rotate or tilt the wheelchair (if the patient uses wheelchairs), walking, and going up stairs. A score of 0 , 5, 10 or 15 is given to each aspect. Total score is 100. The lowest score indicate the highest dependency (need to care). This tool is scored based on a Likert 5 scale (too low (a score of 1) and too high (a score of 5). Barthel tool is commonly used in many countries in clinical and epidemiological investigations to determine the dependence of patients with chronic diseases and disabilities, particularly stroke to others. Numerous studies have proven the validity and reliability of this tool [18, 19, 20, 21, 22 and 23].

Table 1: Self- efficacy program for patients with stroke

Session	Content	Goal
First session	Completing questionnaires, introduction of people with each other, explaining the group's goals and rules, identifying the problems and needs of individuals, explanations about the therapy sessions, discussions about the disease (definition, symptoms and incidence), how to prevent complications and risk factors Catering and asking questions and giving reply	introduction
Second session	Review previous session, training how to dress, bath, eat, activity and rest, defecation, make-up, bowel and bladder control, using the toilet Catering and asking questions and giving reply, asking the patients to perform the trained techniques	Improvement of Patient's independency
Third session	Discussion about the topic and exercises of previous session, and solving the patients' problems and training how to transfer from bed to chair and vice-versa, rotate or tilt the wheelchair (if the patient moves via wheelchairs), walk, and go up stairs Catering and asking questions and giving reply, and specifying home exercises	Improvement of Patient's independency
Fourth session	Discussion about the topic and exercises of previous session, and solving the patients' problems and training the individuals' expectations from themselves and the degree of compromise of each patient with the disease, improvement of self-efficacy beliefs and cognitive skills, increase confidence and endurance to deal with the problem, raise the level of tolerance and compromise in the face of problems Catering and asking questions and giving reply, and specifying home	Improvement of self-esteem
Fifth session	Discussion about the topic and exercises of previous session, and solving the patients' problems and training how to recognise the week and strength points and focus on capabilities and use the strength points to reduce the problems, introduction to the negative feelings of the patients such as depression, disappointment Catering and asking questions and giving reply, and specifying home	Improvement of self-esteem
Sixth session	Discussion about the topic and exercises of previous session, and solving the patients' problems, making the patients familiar with stress and anxiety reduction methods including relaxation, deep breathing, introduction to problem solving technique Catering and asking questions and giving reply, acknowledging patients, completing Barthel questionnaire	Introduction to use problem solution technique

Barthel questionnaire was completed at the end of sessions in both test and control test. Then the patients implemented the trained methods in the house for 1 month and during this period, the researcher asks their probable problems via telephone and tries to solve them.

One month after the implementation of the program, the mentioned questionnaires are completed for the test and control group and the results were statistically analyzed by using descriptive and inferential statistics and SPSS software version 18.

It should be noted that in addition to pharmacotherapy, 2 training sessions was held for control group patients in which the side-effects of the consumed medicines was discussed.

In this research, points such as obtaining written consent and ensuring the confidentiality of information in order to comply with ethical issues in research were taken into consideration.

Research findings

In this research, 50 patients with stroke participated who were equally divided into test and control group. The mean age of patients in the test group was 63.4 and it was 61.2 in the control group. The majority of patients in the test group (64%) and in the control group (60%) were married. The majority of the subjects in the test group (32%) and in the control group (28%) had middle school degree.

The statistical results showed that both test and control groups didn't have significant statistical difference in terms of demographic characteristics, and the two groups were the same in terms of these features.

Independent t-test results showed that the mean scores of self-care before the intervention didn't have significant difference in two groups (P = 0.30) but immediately (p = 0.02) and 1 month after the intervention (P <0.001), the mean score was significantly greater in the test group compared to the control group **[Table 2].**

Variance analysis test with repeated observations also showed that the average scores of self-care patients in the experimental group had a significant difference between the three time intervals (P <0.001). LSD post hoc test showed that the patients' mean score of self-care in the test group had significant differences with each other in all time intervals (P <0.001) variance analysis test with repeated observations showed that the patients' mean score of self care in the control group didn't have significant difference in the three time intervals (P =0.11) **[Table 2].**

The results of my test - Whitney showed that one month after the intervention, the activity condition in the intervention group had a significant difference compared to control group in all activities (eating, bathing, adornment, etc.) (p<0/05). In other words, the presented program for enhancement of different fields of self-care has had a positive effect **[Table 3].**

Table 2: Average self-care scores of patients in two groups in different times

Time	Test group		Control group		Independent T-test	
	Average	Standard deviation	Average	Standard deviation	T	P
Before the intervention	52	6.6	53.8	5.5	1.05	0.30
Immediately after the intervention	63.8	14.8	54.6	12.1	2.41	0.02
1 month after the intervention	90.4	16.1	59.2	13.9	7.33	<0.001
Variance analysis test by repeating the observations	P<0.001 F=72.20		P=0.11 F=2.40			

Table 3: Abundance distribution of the condition of different activities of Barthel index one month after the intervention in test and control groups

`		Test group		Control group		Man-witni test	
		Number	percent	Number	percent	z	P
feeding	0=unable 5=need help cutting, spreading butter, etc., or requires modified diet	*1* *20*	*4٪* *80٪*	*0* *13*	*0* *52٪*	*2.23*	*0.02*
	10=independent	*4*	*16٪*	*12*	*48٪*		
bathing	0=dependent	*6*	*24٪*	*17*	*68٪*		
	5=independent(or in shower)	*19*	*76٪*	*8*	*32٪*	*3.09*	*P<0/001*
GROOMING	0=needs to help with personal care	*1*	*4٪*	*13*	*52٪*		
	5 = independent face/hair/teeth/shaving (implements provided)	*24*	*96٪*	*12*	*48٪*	*3.74*	*P<0/001*
DRESSING	0=dependent	*0*	*0٪*	*0*	*0٪*		
	5 = needs help but can do about half unaided	*3*	*12٪*	*19*	*76٪*		
	10 = independent (including buttons, zips, laces, etc.)	*22*	*88٪*	*6*	*24٪*	*4.5*	*P<0/001*

BOWELS	0 = incontinent (or needs to be given enemas)	*0*	*0٪*	*3*	*12٪*	*4.8*	*P<0/001*
	5 = occasional accident	*3*	*12٪*	*17*	*68٪*		
	10=continent	*22*	*88٪*	*5*	*20٪*		
Bladder	0=continent, or catheterized and unable to manage alone	*1*	*4٪*	*0*	*0٪*	*3.8*	*P<0/001*
	5=occasional accident	*2*	*8٪*	*17*	*68٪*		
	10=continent	*22*	*88٪*	*8*	*32٪*		
Toilet use	0=dependent	*0*	*0٪*	*0*	*0٪*	*4.25*	*P<0/001*
	5=needs some help,but can do something alone	*3*	*12٪*	*18*	*72٪*		
	10=independent(on and off, dressing	*22*	*88٪*	*7*	*28٪*		
Transfers (bed to chair and back)	0=unable, no sitting balance	*0*	*0٪*	*0*	*0٪*	*3.9*	*P<0/001*
	5=major help(one or two people, physical)	*1*	*4٪*	*5*	*20٪*		
	10=minor help(verbal or physical)	*6*	*24٪*	*16*	*64٪*		
	15=independent	*18*	*72٪*	*4*	*16*		
Mobility(on level surface)	0=immobile or < 50 yards	*0*	*0٪*	*0*	*0٪*	*5.58*	*P<0/001*
	5=wheelchair independent, including corners, > 50 yards	*0*	*0٪*	*5*	*20٪*		
	10= walks with help of one person (verbal or physical) > 50 yards	*4*	*16٪*	*19*	*76٪*		
	15=independent (but may use any aid; for example, stick) > 50 yards	*21*	*84٪*	*1*	*4٪*		
stairs	0= unable	*0*	*0٪*	*0*	*0٪*	*3.51*	*P<0/001*
	5= needs help (verbal, physical, carrying aid)	*13*	*52٪*	*24*	*96٪*		
	10= independent	*12*	*48٪*	*1*	*4٪*		

DISCUSSION

This study is designed and conducted to investigate the effect of self-efficacy program on self-care ability in patients with stroke.

The results of paired T-test for comparing test and control group, shows that there is a significant statistical difference in self-care level 1 month after the intervention ($p < 0.05$) and the patients' tendency to obtain information about the disease type and nature, the remaining physical complications, duration of the disease complications, the desire to gain independence in mobility and individual activities, tendency to get off the bed in the first chance and finally getting rid of dependence to others in doing daily activities, are the probable reasons for the difference.

Participation and accepting the patients' responsibility is the important principle in self-care. Since chronic diseases have a significant impact on the patients' life and controlling many of the disease's consequences is possible through self-care behaviors [24], therefore, helping the patients to understand that their disease is controllable can increase their confidence about living with a chronic disease [25].

According to the findings of tables 2 and 3 about the increase of obtained average scores immediately after the intervention and one month after the intervention in test group, in Barthel index area including eating food, respecting personal hygiene (bathing and titivation), dressing and using the toilet; following items can be mentioned:

Training simple bathing methods, training how to bath in the bed, explaining the importance of muscle massage with warm water, continuous physiotherapy and participating patient in bathing, presenting simple self-care training for dressing up, using dresses with pressing buttons, using simple and long dresses, the face to face training how to wear dress in paralyzed organs and training the family members to create an opportunity for the patient to wear his clothes himself or change his clothes, sensitize the patients infected to stroke to respecting personal hygiene, training personal hygiene methods by using the lowest energy, installing hand clamps from the patient's bed side to lavatory place or even inside the lavatory, training how to embed non-slip flooring in the lavatory, training how to use Western toilet and the high tendency of patients to independence.

According to the tables, mean scores related to the mobility areas and the transfer from the chair to the bed (and vice versa), didn't have significant difference ($p > 0.05$) in two groups in the stage before the program presentation, but the difference become significant ($p < 0.05$) in the stage after the program is presented, and its reason can be due to the following points:

Teaching short-term methods of standing and sitting, training how to walk with a walker or cane, training how to walk up stairs and vice versa, doing exercises within the joint motion area and training it to the patient's family members, persistent physical therapy of patients and sensitization of the patient to the risk of bed ulcers, deformation of joints shape and the risk of clots in the veins.

The findings of most studies indicated that self-efficacy is effective on self-care behaviors and a few studies didn't show any relation between the two variables.

Leeve et al study, which was conducted to explain the relation between self-efficacy and dietary behavior of fat consumption, showed self-efficacy has a significant relationship with the Dietary fat consumption index [26].

Diabetic patients, who had higher levels of self-efficacy, were more successful in conducting self-care behavior and management of chronic renal failure. These people are more able to improve self-care behaviors (such as reducing stress, making decisions about the disease, positive attitude) and this is in agreement with Bandura's theory that defined self-efficacy as an individual's ability to perform self-care behaviors in a certain situation [27].

Khezrloo and Feizi study, which is conducted to investigate the relationship between perceived self-efficacy and self-care in diabetic patients, showed that there is always a significant positive correlation between scores of self-efficacy and self-care of diabetic patients ($p<0.05$) [28], However, in Garvin and Chiliboy study which was conducted to investigate social support, self-efficacy and self-care behaviors in patients with diabetes, a significant relationship between self-efficacy and self-care isn't shown [29].

FINAL CONCLUSION

In general, the bilateral relationship between self-efficacy and self-care necessitates that improve of self-efficacy leads to the increased probability of developing self-care behavior in the patient. In order to justify the relationship, it can be argued that people with higher self-efficacy consider higher goals for themselves and expect better outcomes and consider the obstacles and problems which are existent in self-management as controllable challenges and therefore, they further proceed self-management. Therefore, based on the conducted studies it can be said that self-efficacy can improve self-care behavior in chronic diseases that require self-care.

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