

The Application of Roy's Adaptation Model to Promote Psychosocial Status of CVA Patients

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Abstract

Cerebrovascular accident (CVA) is a chronic disease which influences different aspects of human's life such as the psychological and social dimensions. The patients' recovery of balance in these dimensions needs proper and pre-planned care. Therefore, the objective of present study is to examine the effects of a care plan up on the extent of patients' compatibility with psychosocial dimensions in reference to Roy's adaptation model and from biological aspect. The present study is based on a clinical trial of 50 CVA patients in selected hospitals of Isfahan during 2014-2015. The studied units are selected through accessibility sampling and randomly assigned to two groups of similar size. The necessary data is collected through researchers' developed form of recognition and review of Roy's model. The care plan is developed based on the incompatible behaviors and their stimuli which is implemented for the test group and follow-up study was also done. The control group receives routine cares. The collected data is analyzed through SPSS Software (version.18) and the statistical tests are analyzed. The mean score of compatibility before intervention in the two groups shows no significant difference in regard to psychological adjustment (i.e. self-perception, independence-dependence) and social dimension (role-playing) but a significant difference is found after intervention in the two groups ($P < 0.001$). The application of designed care plan based on Roy's adaptation model with holistic approach and the cares based on cooperation among the units leads to enhancement of psychosocial dimensions among CVA patients.

Keywords: Cerebrovascular Accident, Roy's Adaptation Model, Psychosocial Adaptability, Care Plan

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Cerebrovascular accident (CVA) is one of the most common debilitating neurological diseases in middle and old age. In addition, it is the third most common cause of death after cancer and cardiovascular diseases the prevalence of which enhances with increase of age [1]. In Iran, 327 out of 100000 individuals of the population undergo CVA. It might be the most common factor of disability of adults in Iran [2].

As a significant event, cerebrovascular accident (CVA) might influence all aspects of human life, especially the psychological and social dimensions. It might lead to some cognitive disorders such as lack of attention, memory loss, learning difficulties and impaired consciousness of time, place and individuals. These disorders influence the abilities of a person and lengthen their recovery. On the other hand, the associated studies show that 20 to 25 percent of the patients experience mood disorders, stress and discomfort in 6 months after CVA which lead to negative effects upon the association of the patient with his/her family and friends or social isolation. Of the other problems of CVA patients, one could point to reduction of self-confidence and self-concept disorder which might lead to

disruption of body image, feeling of lack of attractiveness, and finally obsession about body appearance and functional disorder [3]. Such consequences might lead to a number of social challenges such as low economic income, social isolations, depression and increase of mortality among the patients [4].

Cerebrovascular accident (CVA) might also lead to individuals' feelings of dependence and less social value in the case of negative feedback from others as a result of which such negative feelings are internalized and lead to mode dependence.

Through affecting all dimensions of the patients, this disease influences their lifestyle and disrupts their ability to overcome the changes of lifestyle and adapt with vicissitudes of life.

It is evident that the process of adaptation with a chronic disease such as CVA is a process which is consistently influenced by individual and environmental stimuli. With increase of a patient's adaptation in different aspects (i.e. physiological and psychological), he/she might obtain a more desired control of his disease [5]. The regaining of health after chronic diseases might be realized through application of an adaptation model for all aspects of adaptation (i.e. physiological aspect as well as psychological aspects of self-perception, role-playing, and independence) [6]. This is because of through evaluation of the patient in this model, development of proper nursing measures

as well as modification of stimuli of incompatible behaviors which increase the frequency of compatible behaviors as result of which the patient attains better physiological and psychological adaptation [5].

The provision of care to the patients by nurses should be done through a model of holistic care. The training program based on Roy's model offers a framework for nurses' better thinking and decision making in regard to different conditions of the patient so as to enable him/her to analyze the current conditions in a more favorable manner, organize his/her thoughts and make the best decision for caring after the patient. On the other hand, it is presumed that through application of a care plan based on Roy's model, the normal behaviors of the patient increase and the complications of the disease as the most significant objective of caring after CVA patient decrease [7].

Roy's model of nursing defined nursing as a science, and the adaptation of this scientific knowledge into the practice of nursing. Care and treatment of those with chronic disease aims not for a return to full healthy status or a cure, but rather adaptation to and cooperative management of the disease and the treatment program. Available studies show that maladaptation generally runs higher in patients with long-term disease and that insufficient adaptation increases mortality and morbidity. Maladaptation also increases healthcare costs and prescribed medications lose their effect as a result of patient maladaptation. Maladaptation also favors disease progression and a reduction in quality of life [8].

Therefore, the adaptation process after CVA demands a plan for admission to reduction of abilities, vicissitudes of life, management of stresses and adaptation with new changes of life. In addition, the consideration of supportive groups such as family and friends, NGOs that support the patients and psychological interventions play a facilitative role in this balance. The objective of present study is to examine the effects of physical care of the patients upon CVA patients in social-psychological dimensions.

Materials and Methods

This study is a clinical trial with two-group (intervention and control), two-stages, and before-after design done in 2014 upon two selected educational hospitals of Isfahan City. The inclusion criteria were age of higher than 18 years, permission of inclusion in care plan by the associated doctors, through awareness of time, place, and individuals, lack of visual and hearing problem, lack of musculoskeletal disorders that prevent fulfillment of care plan, experiencing CVA for the first time, inclination, motivation and ability to receive training and execute care plan, knowing Persian language and lack of respective or global aphasia. In addition, the disinclination of the patients to continue care plan and absence for minimal two sessions during the study were considered as exclusion criteria.

Based on the confidence coefficient of 95 percent (5 percent level of error), 25 individuals were assigned to test group and the same number of patients were assigned to control group.

In the present study, nursing process form, Roy's model, library sources, review of journal in famous internet websites such as Pubmed, SID, SCOPUS, Esvier, and Ovid, and the examination of associated instruments, the common requirements of the patients were included in the questionnaire form developed by the researcher

so as to collect the necessary data. The questionnaire includes 56 questions to study the extent of adaptation with different aspects. In this questionnaire, 28 questions were associated with activity, rest, nutrition, excretion, circulation, oxygenation, fluid, electrolyte and endocrine glands, 13 questions were about self-perception such as self-physique, self-mentality and self in association with others, 8 questions were regarding role playing in regard to family, familial roles (role of wife, mother and other roles of the patient) and family's expectation of patient and 7 questions were about independence-dependent aspect in personal and social relationships of the patient, and associated habits.

The questionnaire form developed by the researchers on examination and review of adaptation was localized and distributed among 10 faculty members of medical and nursing subjects so as to be verified in regard to its validity and reliability. After receiving their viewpoints, the necessary changes were made. The reliability of the questionnaire form was approved by pilot study and determination of Cronbach's alpha coefficient for 10 patients the value of which was 76.6.

The Likert five-point scale was used to score the choices from zero (never), one (a short time), and two (sometimes) to three (often) and four (always). As a result, the score of each sample in regard to physiology, self-perception, role-playing, and dependence-independence respectively ranged between 0-120, 0-52, 0-32, and 0-32 the total score of which ranged from 0 to 224.

The researchers visited the study setting and selected the patients with presumed characteristics for inclusion in the present study through convenience sampling. After explanation of research objectives and filling-in the permission form, the samples filled in the form of demographic data. The samples were assigned to two groups of test and control through assigning them based on random number table. After two weeks from discharge of the patients, the samples in both groups were conducted to fill in the questionnaire form of study and review of adaptation level. Then, the care training plan was executed for the test group. In this regard, the samples were assigned in four groups each of which included 5-6 individuals. Based on the Roy's model, six steps of nursing process were executed. In the first step of evaluation, the compatible and incompatible behaviors in association with four modes of adaptation were determined through interview and observation. For instance, disruption of daily activities was defined as an incompatible behavior.

In the second step of evaluation, the stimuli of each incompatible behavior in biological aspect were identified and classified into different types of residual, contextual and focal stimuli. For instance, in regard to incompatible behavior of disruption of daily activities, the main stimulus is CVA, the contextual stimuli are factors such as early fatigue, paralysis of hand or one side of the body, numbness and loss of ability to work, and residual stimulus is paralysis of one side of the body.

In the third step, the nursing diagnoses were registered in detail For instance, the impairment to do daily activities was detailed by mentioning the inability to properly use some objects such as toothbrush, inability to put on closes, take bath, using one's hip and resulting impairment of physical mobility, weakness and numbness of some organs as a result of reduced blood supply to the brain.

In the fourth step, the researcher and the patient collective design short- and long-term objectives. Within the fifth step, the interventions were done based on a training protocol by a care team the members of which were nurse/researcher, head nurse, doctor, nutritionist, and psychologist. The plan was offered in theoretical and practical manners along with training pamphlet for four training sessions each of which lasted from 60 to 90 minutes. The plan was offered for 2 weeks. In addition, the patients of the test group were called once a week for one month from the end of the sessions. In regard to the conditions, the patients added to the developed questions. In the sixth step, the form of study and review of adaptation level was filled in by the two groups in 8 weeks after discharge.

In the present study, the patients of control group had normal and routine treatment. After the end of the study (8 weeks), the patients' compatibility was measured through the form of study and review of adaptation level. After the end of study, the educational pamphlet was given to the individuals and the necessary information was explained to them during one session.

After 8 week from the start of the study, the questionnaire form of study and review of adaptation level was filled in by the two groups and analyzed by SPSS Software (version 18) and statistical tests.

Findings

Based on table 1, the males had the highest number of the samples in both groups. The mean age in the test group was 67.5 ± 9.8 and it was 69.04 ± 8.9 in control group. 80 percent of the samples in the test group and 88 percent in the control group were illiterate or had lower-than-diploma degree. In addition, 76 percent of the samples in test group and 80 percent the samples in control group were married. In regard to dwelling place, the majority of the samples in both groups were living in urban settings. The findings also showed that before intervention, the two groups had no significant difference in regard to personal characteristics and contextual variables affecting the study ($p=0.55$).

Table 1: Frequency Distribution of CVA Patient based on Demographic Features in Test and Control Groups

Demographic Features	Group		P-value
	Normal Plan (Percentage)	Plan based on Roy's Model (Percentage)	
Age (49-81)	69.04	67.5	P=0.56
Sex (Female)	32	40	P=0.56
Sex (Male)	68	60	
Level of Education (Illiterate or lower than diploma)	88	80	P=0.96
Level of Education (Diploma and higher)	12	20	
Marital Status (Single/ Divorced/Widow)	20	24	P=0.40
Marital Status (Married)	80	76	
Residence Status (Urban)	73	80	P=0.50
Residence Status (Rural)	28	20	

Table 2: Comparison of Means of Adaptation Dimensions in Studied Units before and after Intervention

Dimensions of Adaptation	Before Intervention X±SD	After Intervention X±SD	p
Physiologic	47.4±8.4	94.7±7.8	<0.001
Self-perception	14.86±5.64	32.86±5.10	<0.001
Independence-dependency	13.16±4.34	23.25±2.19	<0.001
Role-playing	7.1±4.06	21.1±3.4	<0.001

Discussion

The results of present study show that doing the care plan based on Roy's model is influential upon the adaptation level of CVA patients in regard to their social-psychological dimension (i.e. self-perception, role playing and independence-dependency). The results of other associated studies also showed that care and training based on this model could be influential upon the incompatible behaviors of cardiac-disorders patients such as high blood pressure, high blood lipids, self-care, improved quality of life and sleep disorders [8]. In addition, care and training based on this model for patients with chronic renal failure influence the incompatible behavior of early fatigue in daily activities and some laboratory factors. In addition, the application of this model for care and training of diabetic patients influences some incompatible behaviors such as improper control of blood sugar found out that this model positively affects the behaviors of pregnant mothers (i.e. psychological aspect) such as acceptance of pregnancy, childbirth, relationships with spouses, as well as a sense of well-being which is consistent with findings of present study [9,10].

Adaptation is the ability to deal with variable environmental and internal conditions. The social-mental adaptation is a psychological process in which an individual deals with daily inclinations and challenges to get them under his/her own control. When an individual has social-mental adaptation that his/her responses to surrounding stimuli represents the best possible interaction. As a result, he/she can be sufficiently active, refrain from worry and conflict, face the problems, think about them, realize his/her decisions and enjoy the life to its fullest. In addition, he/she can have control over his/her emotions and obtain a proper mental image and self-confidence [11]. In the case of disruption of mental-social adaptation, some problems such as sleep disorders, restlessness, irritability, nervousness, fatigue, anxiety, loss of concentration, lack of control over emotions and isolation might occur because as believed, for maintaining balance and self-integrity the human needs to adapt with surrounding stimuli in four aspects. In fact, the level of adaptation is determined in the process of interaction with residual, contextual and focal stimuli [12,13].

As the results of present study show, the adaptation score for the test group and in regard to the dimension of self-perception increased from 14.86 to 32.86 while in association to the dimension of role-playing, the adaptation score increased from 7.1 to 21.1 which signifies meaningful changes in these dimensions ($P=0$).

Roy believed that self-control is an important aspect in regard to chronic diseases. Such patients need to learn a set of behaviors to control their disease. Caring after a patient with chronic diseases demands focus on changing his behavior to dominate normal and compatible conducts. These behaviors are themselves affected by

different stimuli (focal, contextual and residual) the modification of which, during a care and training plan, might increase the extent of adaptation and control of the disease [5]. In addition, due the fact that human is essentially a holistic entity, attention to one aspect of his life might influence the other aspects too [6].

Human is mad of different material and immaterial elements, organs and faculties the set of which constitute his entity. These elements, organs and faculties are closely interacting with each other so that the defect of one might lead to defect of others. This means that the material and immaterial aspects should match each other because they influence one another. The admission to this presumption shows that nursing and caring of a human should be done in an integrated manner and including simultaneous caring of physical and mental aspects. In this regard, in treatment and caring procedure, the nurse should seek to benefit the effects of different aspects upon each other to contribute to the health of the patient such as mental-psychological cares [14].

After application of Collaborative care plan to study its effect upon the quality of life of CVA patients, found out that intervention in one aspect of their lives led to improvement of all other aspects such as daily activities. Therefore, doing a caring intervention might biologically influence other aspects such as adaptation in independence-dependency, role-playing and self-perception.

Chen stated that at the recovery period after CVA, some significant biological and psychological challenges are raised. Therefore, offering proper supportive, mental and psychological interventions that increase adaptability is critical and significant. As a result, active, social and psychological methods are raised in regard to adaptation which might lead to acceptance of life changes and involvement with new roles, activities and factors of after-CVA adaptation in long-term. The past studies show that intervention in each aspect of adaptation of patients with chronic diseases might influence the social and psychological aspects of the patients. Sadeq Nejad did a study on examination of the effects of care plan developed based on Roy's model upon the extent of psychological adaptation of type-3 diabetes patients and found out that the mean scores of incompatible behaviors shown in test group had significant reduction in the aspect of independence-dependency ($p < 0.05$).

The results of a study by Modersin regarding the biological effect of slow message on premature infants (27 to 32 weeks of pregnancy) through Roy's model showed that intervention in the test group led to decreased irritability, reduced distressful behavior, reduced drowsiness, and increased duration of restful sleep. In addition, the results showed that training care plan from biological aspect was also influential upon the aspect of independence-dependency. In addition, the mental-social adaptation of CVA patients compared with per-training stage had a significant difference because the mean score of adaptation increased from 13.16 to 23.25 ($P=0$). The independence-dependency dimension revolves around the connections of individuals, objectives, and development of associations [15].

In an study by Achill on determination of the effects of training the patients with chronic obstructive pulmonary diseases on the extent of physical and physiological adaptation based on adaptation model, no significant difference was observed in regard to the aspect of independence-dependency ($P > 0.05$). The results of this study

showed that the patients need more familial support to increase their adaptation in regard to the aspect of independence-dependency. This issue should be attended within the care plans of the patients. The results also showed that training contributed to CVA patients to increase their self-awareness, understand their strengths and weaknesses and attain a level of self-understanding all of which help them to reduce their weaknesses and increase their strengths. As a result, the person accepts the realities better and adapts with them in a more proper manner which in itself reduces the mental pressures.

The results of studies by Akbar-Zade Arani in regard to the study of the effects of training designed based on Roy's theory up on mental-social adaptation of the mothers of mentally retarded children showed that after intervention, mothers have more self-awareness, knew their strengths and weaknesses and attained a sufficient level of self-understanding to reinforce their positive characteristics [16].

Due to chronic nature of CVA and the effects it might impose upon the role-playing of an individual such as reduction of daily activities, the utilization of standard care plans might lead to enhancement of quality of doing daily activities by such patients based on nursing patterns and with emphasis on self-revolving role of the patient and his participation in improving the competencies of understanding and coping with stimuli of incompatible behaviors. Therefore, the nursing intervention, either directly with the aim of caring after physical dimensions or indirectly upon non-physical dimensions, might influence the role-playing of the person that receives a care.

Conclusion

The results of present study show that Roy's adaptation model is able to enhance the adaptation level of applicants from psychological viewpoint. Therefore, the application of this model offers an inter-department approach, creates the possibility of coordination and enables the cooperation of all members of health system. As a result, it can be used as a solution for caring of chronic patients.

The application of nursing theories in research domains and clinical fields has expanded the knowledge of nursing field too and it might contribute to nursing theories in regard to nursing cares and nursing studies. Based on the results of present study, it seems that one might use the positive effects of this model to control the CVA patients in a more effective manner. The cares offered based on this pattern, the demands of the patients and follow-up cares of the nurses might contribute to control of disease and increase of his/her adaptation to more significant extent.

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