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Investigating the effect of implementing a program based on transitional care model on the quality of life and the ability of doing activities of daily living among patients with stroke

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Abstract:

BACKGROUND: Stroke is one of the major causes of disability among individuals. Transitional care of a stroke patient can contribute to sustaining and enhancing the quality of care. The aim of this study is to determine the effect of implementing a program based on the transitional care model on the quality of life and ability of doing daily activities among patients suffering from stroke.

MATERIALS AND METHODS: This research was an interventional study performed on 80 patients with stroke referring to the hospitals affiliated with Isfahan University of medical sciences. For data collection, demographic, quality of life measurement following stroke, and Bartell index of daily activity measurement questionnaires were used at the beginning of the study and 10 weeks following discharge. The transitional care model was undertaken for the intervention group from the second day of hospitalization until 10 weeks postdischarge. The data were analyzed using SPSS software and statistical methods.

RESULTS: The results indicated that the mean quality of life and ability of performing the activities changed significantly after the intervention between the two groups, with the mean changes of these scores becoming significant compared to the preintervention between the two groups ($P < 0.05$). In both groups, the mean value of these scores increased after the study compared to the baseline, though this increase was greater in the intervention group.

CONCLUSION: Implementing the transitional care model could contribute to improving the quality of life and performing the daily activities among stroke patients.

Keywords:

Activities of daily living, quality of life, stroke, transitional care

Introduction

Any changes in the neurological activity of the brain can affect the behavior and function of people.^[1] One of the neurological disorders that changes the function of part of the body and physical perception of the body position is stroke. Stroke refers to sudden

and rapid progression of neurological symptoms with the vascular origin which continues for at least 24 h.^[2] Stroke claims the first rank of mortality resulting from brain vessel disorders in the US and around the world. Global statistics indicate that annually around 500,000 people suffer from stroke.^[3] Studies conducted in Iran in 2016 estimated the incidence of stroke

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as 100–150/100,000 people.^[4] Stroke is considered the main cause of long-term and serious disabilities.^[5] The patients suffering from stroke find numerous disorders psychologically and functionally after the incidence of the disease.^[6]

One of the important variables affected by stroke and affecting the patient's recovery and rehabilitation is the quality of life as well as the person's independence in performing their daily activities.^[7] Physical disorders and the presence of physical symptoms directly affect all aspects of quality of life. Uncontrolled physical problems cause psychological issues such as depression, anxiety, and frustration for the patient; physical symptoms also directly affect the quality of life.^[7]

Stroke is considered a devastating disease, where patients do not have the preparation to face and handle the effects of stroke in their daily life because of unpredictable and sudden onset. Accordingly, implementing patient preparation programs can be an effective step to improve the quality of life and ability of performing daily tasks.^[8] The healthcare team can contribute to improving the quality and ability of doing daily activities for the patient by investigating their health status and recovering it; once the health status improves, the quality of life of patients would also be ameliorated.^[9] To enhance the quality of life of patients, provision of health-care services to them should continue after hospital discharge. Many patients with stroke after discharge require rehabilitation interventions, which can be possible through implementing care programs by the nurse to the patient and their family.^[10]

One of the recent tendencies considered for specialized nurses which could establish a bond between the nurse and the society as well as sustain the provided care and enhance their quality, especially in chronic diseases is the transitional care model and its implementation by the liaison nurse (the nurse that provides health-care services from hospital to home).^[11,12]

Transitional care can be considered as one of the preparation methods for patients with stroke.^[12] This is because on the one hand hospitalization at the hospital for care provides a suitable opportunity to use the transitional care program. Furthermore, because of the presence of a companion, by involving them in the patient care, collaborative communication can be developed and the entire family can be empowered regarding scientific care of the patient. All these would enhance the patient's self-confidence to exert more effort for achieving the goal of recovery.^[12,13]

Overall, it can be stated that in studies on the transitional care model, the results have been satisfactory and

positive.^[14-16] However, considering different cultural, social, and economic differences among patients in Iran and other countries as well as the high incidence of stroke in Iran, and since so far no similar program has been implemented in the country regarding stroke, the researcher intended to conduct the present study to determine the effect of a program based on transitional care model on the quality of life and ability of doing daily activities among patients with stroke hospitalized in the hospitals affiliated with Isfahan University of medical sciences.

Materials and Methods

This research was an interventional study (IRCT20190712044181N3) with intervention and control groups, performed on two groups of patients with stroke from October 2019 to December 2020 for 15 months at hospitals of Isfahan city including Alzahra, Kashani, and Amin. Once the proposal was approved in the research Deputy of Isfahan University of medical sciences and the ethics code was received (IR.MUI.RESEARCH.REC.1398.374), out of 267 stroke patients referring to sampling centers during 15 months, the researcher chose 80 stroke patients who met the inclusion criteria through quota sampling (based on the number of active beds in the neurology internal ward of each hospital: $n = 15$ Alzahra, $n = 15$ Kashani, and $n = 10$ Amin). The sample size was determined 36 based on the following formula; by considering 10% attrition of the samples, 40 were assigned in each group from the baseline.

$$n = \frac{(Z_1 + Z_2)^2 (2S^2)}{d^2}$$

Z1: Assurance coefficient 95% = 1.96

Z2: Statistical power 80% = 0.84

S: An estimation of the standard deviation of each of the variables in the two groups = 0.8

d : The minimum difference between the means of each of the variables between the two groups = 0.63

The inclusion criteria were diagnosis of stroke point a neurologist, consent to participate in the study, not suffering diminished level of consciousness or other neuropsychiatric diseases, hospitalization with stroke diagnosis for the first time, no brain surgery for the patient, the possibility of patient follow-up, having at least GCS 13–15, and the patient being a resident of Isfahan. The exclusion criteria included unwillingness to continue participation, long hospitalization, diminished patient level of consciousness, and the patient participation in another educational program.

After receiving written permission from the Research Deputy of Isfahan University of medical sciences, the researcher presented in the site of research, and after explaining the research goals to the relevant authorities at three hospitals Alzahra, Kashani, and Amin, as well as acquiring official permission from them, the researcher referred to the mentioned hospitals during weekdays and based on the inclusion criteria, he chose the eligible hospitalized patients on the second day of hospitalization. Once he introduced himself, he explained the goal of the study to them, and in case they were prepared to participate in the study, by receiving written informed consent form, he enrolled them in the study. After acquiring the consent form, the researcher provided the demographic characteristics questionnaire and the educational needs assessment questionnaire to the patients. To prevent the exchange of information between control and intervention samples, first, the control group samples (the group receiving routine hospital care) were chosen, and then the intervention group samples (the group receiving the transitional care) were enrolled. To control the underlying confounding variables (age and gender), the researcher used the group matching method. For data collection, demographic information questionnaires, quality of life, and daily activities questionnaires were used. The demographic questionnaire included items about age, gender, occupation, level of education, economic status, marital status, number of hospitalizations at the hospital. The specific standardized quality of life measurement questionnaire followed stroke had 78 items related to examining the quality of life of patients with stroke with regards to dimensions of energy, family role, language, mobility, mood, personality, self-care, social role, thinking, the function of upper limbs, vision, work, and activity. To score each response, 1–5 would be allocated; the answers would range from absolutely agree (score 1) to absolutely disagree.^[5]

The Barthel Index of Activities of Daily Living captures 10 functional skills (including use of the restroom, controlling urine, controlling defecation, going upstairs and downstairs, eating and bathing, walking, washing hands and face, wearing clothes, and mobility). This questionnaire was completed through interviews with the researcher units in the morning and evening shifts. The mentioned questionnaire had 11 items, in this questionnaire, a score ranging from 0 to 15 is assigned to the response depending on the person's conditions and nature of the item. The reliability and validity of specific quality of life measurement questionnaire following stroke in Iran have been measured based on the content validity method according to expert opinion. To determine the reliability of the instrument, the test–retest method was used, and the reliability was confirmed based on the Pearson correlation coefficient of 0.68.^[17]

The reliability and validity of the Bartell questionnaire in Iran have been investigated by Tagharrobi *et al.* (2011) in Mashhad, with Cronbach alpha of 0.83–0.93.^[18]

To determine the validity of the researcher-made questionnaire (to capture the educational needs of patients), content validity was utilized. The educational content was also prepared after studying different credible books and papers and invalidated according to content and face validity. To explore the content and face validity of the researcher-made questionnaire to determine the educational needs of patients, it was provided to 12 scholars, and once their opinion was applied, it was utilized. To examine the reliability of the questionnaire, test–retest method was used. To conduct this method, the question was provided to 10 stroke patients who met the inclusion criteria. It was given to them again 2 weeks later, and the correlation coefficient between the two tests was determined (correlation coefficient = 0.85).

The intervention group received transitional care program from the baseline of study to 10 weeks postdischarge.^[14,19] For the care planning, the researcher-made questionnaire was used to capture the education needs of patients, patient familiarity with their rights, patient familiarity with the stages and process of treatment, as well as emotional and psychological support. In the transitional care model, the patient would be supported by the researcher. These supports include education about food and medications, disease complications, patient familiarity with the rights, familiarization of the patient and their family the stages and process of treatment, as well as psychological and emotional support through paying attention to these emotional and psychological needs. The care was provided at the time of patient hospitalization at the hospital as at least 1 h per day in the morning or evening shift based on the patient's problems and their questions. The patient received the necessary education about medications and their side effects, proper method of physiotherapy and patient mobility, proper diet, range of motion, psychological and emotional support, the issues that demand referral to the specialist after discharge, proper way of taking the drugs, etc. Once discharged from the hospital, to continue the cares, the researcher monitored them through phone contact and referring to their home. Indeed, initially, at least two problems declared by the patient themselves and regarded as important by the researcher were considered as the treatment program. Once the problem was determined, it was broken down into smaller and simpler components; the prerequisites for performing that activity and undertaking treatment interventions to resolve and mitigate the symptoms and improve the implementation of activity were determined. Eventually, patient education and care to

resolve the self-care problems were undertaken based on credible nursing books and references. In each phone contact and in-person visit, the researcher reminded patients to call him whenever they had any questions, and they could receive consultation about their disease and current status. The researcher implemented the interventions for the intervention group provided as consultation, in-person referral to their home or through phone contact for 10 weeks postdischarge, once every week, and each time 3 h. In each visit, the researcher evaluated the patient’s clinical status, and if he observed any problems in their psychological or emotional health, he would refer them to specialists. The control group received routine hospital care (including the provision of educational brochure at the time of discharge and answering the patient questions). Once discharged, the researcher visited the control group samples in person once every month and talked with them about their problems. In both groups, the quality of life questionnaire and index of activities of daily living were completed again by the researcher in the 10th-week postdischarge. At the end of the research, educational content that had been provided to the intervention group patients was also offered to the control group patients as a booklet. Throughout the research, the inclusion criteria were always in the mind of the researcher, so that in case any exclusion criterion was observed, the sample would be excluded. Confounding factors such as other educational programs for the patients were also considered, which were not implemented, and if it occurred, the sample would be excluded. For analysis, the collected data were coded and then analyzed by SPSS 22 (IBM Company, New York, United States). For this purpose, descriptive statistical methods (including mean, standard deviation, and median) and inferential statistics (including linear regression, independent *t*-test, and paired *t*-test) were used. For the statistical comparisons, the significance level was considered 0.05.

Results

According to Table 1, the results showed that 62% of the samples in both groups were male, while the mean and standard deviation of age in the intervention and control groups were 61.45 ± 11.84 and 60.7 ± 13.54 years. In both groups, the number of married individuals was higher (77.6%). Furthermore, 35% of the samples had diploma and below diploma levels, while academic education claimed the minimum number of subjects in both groups. Further, 57% of the samples had average economic status. The occupation of 38% of men in both groups was worker or employee, and the women were housewives. The results indicated that the two groups had no significant differences in terms of distribution of age, gender, level of education, marital status, economic status, and occupation (*P* > 0.05).

Table 1: Comparing the frequency distribution of age, gender, economic status, level of education, marital status, and occupation of the research units in the intervention and control groups

Variable	Intervention group	Control group	Statistical test
Age (mean±SD)	61.45±11.84	60.7±13.54	<i>T</i> -test: 0.264, <i>P</i> : 0.75
Gender, <i>n</i> (%)			
Male	25 (62.4)	25 (62.4)	Chi square test: - <i>P</i> : -
Female	15 (37.6)	15 (37.6)	
Economic status, <i>n</i> (%)			
Poor	13 (32.5)	14 (34.4)	Chi square test: 0.284 <i>P</i> : 0.868
Average	23 (57.5)	23 (58.2)	
Good	4 (10)	3 (7.4)	
Education, <i>n</i> (%)			
Illiterate	3 (3.8)	2 (2.5)	Chi square test: 0.4.06 <i>P</i> : 0.540
Diploma and below	25 (31.3)	27 (33.8)	
Associate degree	8 (10)	8 (10)	
BA/BS and above	4 (5)	3 (3.8)	
Marital status, <i>n</i> (%)			
Single	4 (10)	3 (7.6)	Chi square test: 0.234 <i>P</i> : 0.890
Married	31 (77.5)	31 (77.5)	
Divorced/widow	5 (12.5)	6 (15)	
Occupation, <i>n</i> (%)			
Unemployed	4 (10)	3 (7.5)	Chi square test: 2.16 <i>P</i> : 0.97
Freelancer	6 (15)	7 (17.5)	
Retired	4 (10)	3 (7.5)	
Housewife	8 (20)	9 (22.5)	
Worker	6 (15)	7 (17.5)	
Employee	12 (30)	11 (27.5)	

SD=Standard deviation

According to Table 2, independent *t*-test indicated that the mean total scores of quality of life of patients with stroke at the baseline did not differ significantly between the intervention and control groups (*P* > 0.05), but after the study, this mean had a significant difference (*P* < 0.05).

According to Table 3, the mean scores of the index of activities of daily living did not differ between the control and intervention groups before the intervention (*P* > 0.05). However, after the intervention, the mean scores of activities had a significant difference between the stroke patients of the control and intervention groups (*P* < 0.05).

Discussion

The present research was performed to determine the effect of implementing a program based on the transitional care model on the quality of life and ability of doing daily living activities among patients with stroke. In the present study, before initiating the intervention, the scores of quality-of-life dimensions and ability of doing daily living activities were measured in both intervention and control groups, whereby no significant difference was found. However, this difference became significant after the intervention between the two groups.

Table 2: Comparing the mean total scores of quality-of-life and dimensions of quality of life of patients with stroke before and after the intervention in control and intervention groups

Variable	Intervention group	Control group	Statistical test (<i>t</i> -test, <i>P</i>)
Quality of life (mean±SD)			
Preintervention	297.75 (19.35)	304.52 (19.15)	1.57, 0.12
Postintervention	325.92 (20.19)	312.32 (23.3)	2.79, 0.007
Statistical test (<i>t</i> -test, <i>P</i>)	8.07, 0.001	4.74, 0.001	
Energy			
Preintervention	15.55 (1.17)	16 (1.13)	1.74, 0.085
Postintervention	17.22 (1.04)	16.5 (1.58)	2.41, 0.019
Statistical test (<i>t</i> -test, <i>P</i>)	8.07, 0.001	-	
Family role			
Preintervention	29.9 (2.28)	30.47 (3.08)	0.369, 0.388
Postintervention	33.57 (2.93)	31.8 (3.19)	2.58, 0.012
Statistical test (<i>t</i> -test, <i>P</i>)	9.81, 0.001	3.71, 0.00	
Language			
Preintervention	32.92 (2.05)	33.6 (1.12)	1.82, 0.072
Postintervention	33.72 (1.67)	32.67 (1.83)	2.67, 0.009
Statistical test (<i>t</i> -test, <i>P</i>)	4.06, 0.023	0.426, 0.672	
Mobility			
Preintervention	32.92 (2.05)	46.12 (2.96)	1.27, 0.206
Postintervention	50.8 (3.57)	49.02 (4.28)	2.01, 0.048
Statistical test (<i>t</i> -test, <i>P</i>)	11.14, 0.001	5.26, 0.001	
Mood			
Preintervention	20.07 (3.83)	20.1 (3.4)	0.975, 0.031
Postintervention	28.17 (5.39)	23.9 (4.52)	3.84, 0.001
Statistical test (<i>t</i> -test, <i>P</i>)	13.9, 0.001	6.64, 0.001	
Personality			
Preintervention	15.07 (1.59)	15.3 (1.58)	0.633, 0.529
Postintervention	16.7 (1.15)	15.82 (1.69)	2.69, 0.009
Statistical test (<i>t</i> -test, <i>P</i>)	7.59, 0.001	2.97, 0.005	
Self-care			
Preintervention	35.47 (1.39)	35.85 (1.31)	1.23, 0.219
Postintervention	35.72 (1.51)	37.1 (1.97)	3.49, 0.001
Statistical test (<i>t</i> -test, <i>P</i>)	2.36, 0.023	3.606, 0.001	
Social role			
Preintervention	20.45 (2.5)	20.3 (3.12)	0.237, 0.813
Postintervention	5.47 (4.33)	23.45 (3.49)	2.3, 0.024
Statistical test (<i>t</i> -test, <i>P</i>)	9.22, 0.001	6.53, 0.001	
Thinking			
Preintervention	16 (1.24)	16.12 (1.58)	0.392, 0.696
Postintervention	16.85 (1.27)	16.1 (1.73)	2.2, 0.03
Statistical test (<i>t</i> -test, <i>P</i>)	6, 0.001	2.71, 0.01	
Upper extremity function			
Preintervention	41.62 (2.83)	42.67 (2.51)	1.752, 0.084
Postintervention	42.3 (1.87)	41.22 (2.84)	1.99, 0.049
Statistical test (<i>t</i> -test, <i>P</i>)	2.73, 0.009	0.075, 0.941	
Vision			
Preintervention	14.07 (1038)	14.4 (0.87)	1.256, 0.213
Postintervention	14.62 (1.71)	15 (1.66)	0.99, 0.325
Statistical test (<i>t</i> -test, <i>P</i>)	3.43, 0.001	2076, 0.009	
Work			
Preintervention	11.62 (0.97)	11.87 (0.68)	1.322, 0.19
Postintervention	11.82 (1.1)	12.42 (1.41)	2.11, 0.038
Statistical test (<i>t</i> -test, <i>P</i>)	2.24, 0.031	3.206, 0.003	

SD=Standard deviation

The scores of quality-of-life before the intervention were low among both groups.

The results of Jafari and Dalvandi suggested low mean quality-of-life score among patients with stroke. Older

Table 3: Mean comparison of scores of index of doing daily life activities of patients with stroke before and after the intervention in the intervention and control groups

Variable	Intervention group	Control group	Statistical test (t-test, P)
Ability of doing daily activities (mean±SD)			
Preintervention	87.92±3.39	87.9±3.31	0.033, 0.974
Postintervention	92.92±2.46	89.55±3.29	5.18, 0.001
Statistical test (t-test, P)	14.25, 0.001	7.62, 0.001	

SD=Standard deviation

patients and widows with low socioeconomic conditions reported poorer quality of life.^[20] The results of the present study are in line with their findings. However, the difference between the present study and this mentioned study is in doing the intervention after measuring the quality of life for patients in the intervention group and comparison of differences against the control group; in that mentioned study, no intervention has been done after measuring quality-of-life.

The results of Jafari *et al.* study's with the aim of examining the effect of educating home rehabilitation on the quality of life of patients with stroke in 2019 in Zahedan indicated that the mean total score of quality-of-life one and 3 months postintervention had significant differences between the two groups, which were higher in the intervention group compared to the control. Considering the effects of home rehabilitation measures, to improve the quality of life of patients with stroke, application of this approach by nurses seems to be recommendable for the participation of the family in providing care for chronic diseases.^[21] Based on the findings obtained from the quality-of-life scores of the patients before and after the intervention in both groups, it was found that quality of life of patients especially in dimensions of energy, family role, language, mobility, mood, personality, self-care, social role, thinking, upper limb function, work, and activity increased after the intervention, which was in line with the results of the mentioned study. The difference between the present study and that mentioned research has been in duration of care, training given, and the duration of patient follow-up throughout the study.

The results of Sahebalzamani *et al.* in 2007 indicated that there was a significant difference between the mean scores acquired across different areas of performance of the research units of the intervention group before and after the education. A significant difference was also found between the function of the intervention group after the intervention and the control group, indicating the increased performance of the intervention group after the intervention compared to the control.^[22] The present study also reached similar results and the mean increase of the performance score

of the research units across various areas of quality of life was higher in the intervention group compared to the control.

In this regard, the results gained by Pourshirvani *et al.* (2017) indicated that after the intervention, there was a significant difference between the two groups regarding daily life activities. In the pre- and postcomparison in both groups, a significant difference was also seen between the intervention and control groups, though the difference was greater in the intervention group. Eventually, it was suggested to use the home care model as a nursing model to support the family of patients for providing principled care and improving the performance of patients.^[14] Considering the changes in the scores of ability of doing daily activities in both groups, in the present study we also reached similar results, whereby the mean total scores of ability of daily activities had significant differences between the intervention and control groups after the intervention, though this difference was greater in the intervention group. The ability of doing daily life activities of the intervention group samples after the study was greater. The difference between the mentioned study and the present research was in the patient care model which was different between the two studies.

The findings of Chalermwannapong *et al.* showed that the functional ability and quality of life of stroke survivors were significantly greater among the treatment group compared to the control. These results suggest that the transitional care model would reduce disability, enhance independence, and improve the quality of life of stroke survivors, and as such, it should be part of stroke care.^[15] The results of the present study concurred with that study findings, and the scores of ability of doing daily activities decreased in both groups of patients, and the patients were dependent on others to do some of their activities. However, after receiving transitional care, a considerable increase occurred in the scores of ability of doing daily activities in the intervention group. The difference between the present study and that research was in the duration of the study.

Wang *et al.* found that transitional care interventions had a significant effect on reducing mortality following stroke, improved daily activities, and ameliorated the general status of patients.^[23] The results of the present study were in line with that research and the scores of ability of doing daily activities were higher in the intervention group. However, the present study had differences with that mentioned research regarding the number of samples, training received by the intervention group, duration of intervention, and duration of follow-up, though the inclusion and exclusion criteria were the same across both studies.

Conclusion

The results of the present study indicated that implementing the transitional care model on patients suffering from stroke could improve the quality of life and doing daily living activities among these patients. Although the patients who had also received routine care and training at discharge (control group) had increase in the score of some of the dimensions of quality-of-life (energy, family role, language, mobility, mood, personality, self-care, social role, thinking, upper limb function, work, and activity), this increase was not as large as that of individuals receiving transitional care; the intervention group showed greater elevation of the score of quality-of-life an index of doing daily activities. In general, based on the results of the present research, it can be stated that developing nursing services based on the transitional care model for patients with stroke is very effective, as it minimizes nonessential referrals of the patient after discharge and risk of disease relapse. In Iran's health-care system, considering the resources and hospital beds, at-home nursing services and transitional care should receive more attention for all chronic diseases. Usage of this method can offer promising results in health-care plans, especially for stroke.

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Conflicts of interest

There are no conflicts of interest.

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