

Influence of Home Visits Nursing on Activities of Daily Living in Stroke Patients

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Abstract: Objective Exploring the influence of the home visits nursing on stroke patients' activities of daily living(ADL). **Methods** 60 cases who suffered from stroke at the first time were grouped into two groups: intervention and control. 30 cases in control group received conventional finally discharge instructions, and in intervention group 30 cases received the home visits nursing on the basis of the conventional discharge instructions, including health education and training in activities of daily living. The improved Barthel indexes were used to evaluate their activities of daily living in one month and three months respectively before and after leaving hospital. **Results** Patients' ADL is stronger than that of the control group after leaving hospital in one and three months respectively, with a significant difference ($P < 0.01$). **Conclusions** Continuous home visits nursing after leaving hospital improves significantly stroke patients' ADL.

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1. Introduction

Stroke is a common disease with higher disability rate, and 70%~80% stroke patients have consequent dysfunctions to some extents, which seriously impact their activities of daily living (ADL) and results in their poor self-care(Zhang and Liu,2009).The poor ADL not only disorders patients' and work seriously and gives patients some negative moods such as needless emotion and depression, but also poses a huge burden on patients' dependents and society. Due to long-term suffering, hospitalization costs and other causes for stroke patients, more and more patients come back home with physical disability for recovery after their conditions are stable in hospital. However, patients miss the best recovering opportunity and suffer from sequela because they and their dependents are lack of knowledge and skills of rehabilitation. Thus, patients should need instructions timely in continuous rehabilitation nursing after leaving hospital (Qian, 2011). In this study, we observed influences of home visits nursing on the stroke patients' ADL after just leaving hospital.

2. Methods

60 stroke patients who suffered from stroke for the first time were selected from the wards of the Neurology Departments in two third grade A-class hospitals in Zhengzhou from December 2011 to June 2012. They were separated into two groups randomly: intervention group and control group, 30 cases each. Inclusion criteria for patients: ① Conforming to diagnostic criteria revised in the 4th National

Cerebrovascular Disease Academic Conference (Qian, 2011), and diagnosed as brain stroke by the CT or MRI head inspection; ② Suffering from limbs dysfunctions to some extents; ③ Having clear consciousness and voluntarily cooperating with researchers; ④ Informed consent to participate in the research. Exclusion criteria: ① Bleeding in subarachnoid space; ② Severe cognitive and speech disorders; ③ The mentally disturbed. Exit criteria: ① Those who have to exit from the study as they suffered major accidents such as critical diseases, harms or death during the study; ② Patients and their dependents exit from the study actively; ③ Those who are unable to be visited due to all kinds of reasons.

Patients in two groups received the conventional intervention and nursing in hospital. ① Control group: Receiving conventional hospital leaving instructions before leaving hospital; ② Intervention group: Before stroke patients leaving hospital, researchers, doctors, nurses, and physical therapists in hospital as well as nurses in community jointly work out the home-visit plan, including time, content and executors for home visits.

The home-visit time: Seeing patients once every week in the first month; once every two weeks in the second month; and once in third month; 30-60 minutes at every turn; the visiting time lasted three months. The home-visit content: ① Health education: arrangements in home environment, requirements of diet nutrients, and precautions in daily ; ② Training of activities of daily living: Training patients how to

dress on and off themselves, feeding, going to toilet, brushing teeth, walking, going up and down stairs; instructing patients to use their affected hands to hold bowls, feeding with healthy hands; encouraging patients to carry a cup for drinking by crossing hands, put on the affected side first then healthy side when dressing up, while taking off healthy side first then the affected side; wringing out towels for washing their faces by taking a faucet as a fulcrum, and combing their hair with long-handle combs(Qi et al., 2009). The home-visiting executors: Qualified researchers and nurses in community by training jointly entered the patient homes for nursing and intervention.

The ADL of patients in two groups was evaluated in one month and three months when and after leaving hospital respectively by the modified Barthel index (MBI) (Wang and Chen,2011). Total ten ADL levels such as feeding, dressing, going to toilet, individual hygiene, bathing, bed and chair shifting, walking on flat ground, going up and down stairs, and bowel and urinary control. Each evaluating item was divided into 1-5 levels with total score of 100 points by complete dependence, maximum help, medium help, minimum help and complete independence. It is found that there is a positive correlation between self-care ability and scores, and the score per level for each item is different from another. The higher score indicates the better ADL. The patients who got more than and equal to 60 points were cared by themselves basically, those who got 41-59 points had moderate dysfunctions, those who got 21-40 points had severe dysfunctions, and those who got less than and equal to 20 points lived their life by depending on other completely. This Scale is applied widely at home and abroad, with better reliability and validity(Wang and Chen,2011).

Data were analyzed by SPSS (16.0 version) after collected. Differences of variables between two groups were compared at base level and timing points by the T-test, and data in abnormal distribution were analyzed by the rank sum test of non-parameter statistical method. The repetitive measurement deviation analysis was used to evaluate whether there was statistical difference of MBI scores at different timing points in two groups.

3. Results

There were 60 hospitalized stroke patients totally in the hospital, who were 30 in control group and another 30 in intervention group. After leaving hospital for one month, 2 patients in control group were not visited for no phone answering or voluntarily quitting the research participating; 2 patients in control group were rejected (rehabilitation) within three months after leaving hospital, and 3 in

intervention group were rejected (two were recovered and one was unable to be contacted). Rejected and un-visited cases were 7 cases, accounting for 11.7% of total patients. Finally, data from 53 patients were collected, of whom were 26 in control group and 27 in intervention group.

The research objects ranged from 36 to 77 years old, with an average of 63.41 ± 11.08 , of whom were 30 male and 23 female. Their educational levels: 25 graduated from junior middle schools and below, 18 graduated from senior schools or technical secondary schools, and 10 were from colleges or above; 28 patients retired, 15 were employed, and 10 were unemployed. Most research objects(44) had spouses. Main watchers for research objects were spouses (33), and their sons and daughters (15). In 53 research objects, 4 patients were lived alone, and most of them (49) lived with their family members(dependents). Clinical data for research objects indicated that 43 patients suffered from cerebral infarction, 8 suffered from cerebral hemorrhage, and 2 were others. 81.1% patients suffered from chronic diseases such as high blood pressure, diabetes and heart disease. 23 in all patients had only one chronic disease, 20 had two or more chronic diseases. All research objects (32) suffered from diseases for the first time.

With the statistical test performed for population demography and disease data for patients in intervention and control groups, the result shows no significance ($P > 0.05$) between groups, with better comparability.

Through statistical comparison to indexes from control group(4) and intervention group(3) where some patients had been unable to be contacted or rejected before intervention, the result indicated it is of no statistical significance($P > 0.05$) between two groups.

The MBI score for research objects in intervention and control groups were analyzed first to check its distribution was normal, then T-test of two independent samples (T: statistical magnitude) were done for normal distribution data, and non-parameter statistical Mann-Whitney U rank sum check (Z was statistical magnitude) for non-normal distribution data.

Results in Table 1 show that there is no significant difference of MBI scores ($P > 0.05$) between intervention and control groups before intervening; after intervening, the comparison at two timing points shows that MBI scores in intervention group are higher than that of control group, with significant difference ($P < 0.01$).

Table 2 shows that results of repetitive measurement data variance analysis of MBI scores for research objects in two groups. Factors between

groups goes by grouping (control and intervention), and factors within group goes by time(three timing points were respectively: before intervening, one month and three months after leaving hospital); their interaction is grouping×time. The result shows: (1) The difference of MBI scores for intervention and control groups is significant($P < 0.01$), while the score for intervention group is higher than that of control group at two timing points after intervening; (2) The difference of MBI scores for stroke patients is statistically significant ($P < 0.01$) between different timing points, which mainly presents more remarkable increase of MBI scores for intervention group at two timing points after intervening than before intervening; (3) Grouping is interactive with time ($P < 0.01$), that is, changes of MBI scores are evidently different for intervention and control groups at different timing points before and after intervening; ADL for intervention group changes evidently at different timing points before and after intervening.

Table 1. Comparison of MBI index scores for stroke patients in two groups(Tp, Timing points ; Bi, Before intervening; Om, One month after leaving hospital; Tm, Three months after leaving hospital)

Index	Tp	Control group (N=26)	Intervention group (N=27)	t/Z
MBI	Bi	45.76±21.39	47.68±20.11	-1.728
	Om	55.68±19.45	77.89±15.57	-12.951**
	Tm	58.55±17.39	84.76±13.63	-8.046**

** $P < 0.01$, the difference is extremely significant.

Table 2 Repetitive measurement variance analysis on MBI index scores for stroke patients in two groups

Index	Factors between groups	Factors within groups	Interaction
	F	F	F
MBI	213.003**	118.821**	27.683**

** $P < 0.01$, the difference is extremely significant.

Table 3 Comparison pairwise to MBI index scores at different timing points for stroke patients in two groups (Cg, control group; Ig, Intervention group; Bi, Before intervening; Om, One month after leaving hospital; Tm, Three months after leaving hospital)

Index	Group	Bi:Om	Bi:Tm	Om:Tm
		MD	MD	MD
MBI	Cg	-5.166**	-4.021**	-0.916
	Ig	-33.081**	-25.821**	-5.754**

** $P < 0.01$, the difference is extremely significant.

Means of MBI scores at timing points for stroke patients in control and intervention group are compared pairwise by LSD multiple comparison. The results are shown in Table 3.

4. Discussion

The common physical disability after patients suffer from stroke is hemiplegia. All stroke patients' disabilities are not caused by the hemiplegia, and the ADL disorders may be also caused by such disabilities as spasm in posture, deformity in knuckles, contracture and muscular atrophy due to lack of necessary recovering nursing method and suspension of rehabilitation training from the acute to recovering period. For this reason, they live a poor life(Yang et al.,2010).

This study demonstrates the continuous home visits nursing the patients receive after leaving hospital can improve their ADL, and also shows through three months of home visits, the ADL in intervention group is better than that of control one, which implies the recovering training instructions and health education in the home visits exert a good effect to improve patients' ADL. In addition, the MBI scores at two timing points for patients in control group after leaving hospital are higher than before the health instructions, which is in agreement with previous similar results(Torres-Arreola et al.,2009). There are two reasons for that. On one hand, the central nervous system in structure and functions has compensation and functional reorganization, a spontaneous recovery after stroke(He et al.,2005). On the other hand, the stroke patients mainly receive treatment at the acute stage in hospital, while after leaving hospital, most of them still have various degrees of dysfunction. As a result, it may cause self-care disability in their daily life and their family burden, and patients and their dependents have to continue to seek for out-of-hospital supports. However, owing to lack of timely and accurate instruction, the effect of spontaneous health promotion from patients and dependents is evidently lower than that of continuous rehabilitation nursing instructions in the control group from the study. Thus, from the repeated measurement variance analysis on MBI scores for research objects in two groups, it is seen that changes at different timing points after intervention are different significantly.

The community-based rehabilitation is a continuation of the hospital-based rehabilitation, whereas home visits nursing is an important way for community-based rehabilitation, and also is one of rehabilitation nursing approaches from hospital-based to community-based. Through home visits, some problems of patients can be found timely, and poor nursing support for patients after leaving hospital can be improved effectively(Huang,2010;Feng et al.,2003). The rehabilitation in the home, a homely re-healthy training, means patients can blend the rehabilitation therapy into daily life, and their re-

healthy training is consolidated constantly. By this way, they reach rehabilitation to the hilt. Besides that, the rehabilitation in the home needs jointly participation of their dependents and supports of family members. Thus, nursing and other medical personnel should pay attention to roles of their dependents, who are indispensable in the whole intervention of community and family.

Stroke patients become more and more in China with improvement of living standard and ageing of society. Currently, rehabilitation instructions for stroke patients are most limited to hospitalized period, as a result, rehabilitation instructions after leaving hospital are restricted to great extent.

However, stroke patients' rehabilitation training is a long-term and continuous process. A great many practices have proved that recovery of motor functions for stroke patients can last over five years till the fixed harms come into being, and overall effect and importance of systematical rehabilitation exercise on stroke patients are recognized in the world. It is very necessary to carry out a long-term home-visiting system and dynamic and continuous rehabilitation instructions for stroke patients. Nurse clinicians have heavy daily work, so it is difficult to do home-visiting and rehabilitation instructions for the out-of-hospital patients in the long term. Thus, the community-based medical services should be strengthened, and community-based rehabilitation nursing services should be developed depending on the hospital. The clinical doctors, physical therapists and nurses should cooperate with the community-based service department, and instruct and train medical workers in communities to improve stroke knowledge and rehabilitation skills. Through correct instructions, patients can promote recovery of their limb functions, strengthen activities of their daily living, and improve their life quality.

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