

EFFECT OF MULTI-DISCIPLINARY CLINICAL NURSING PATHWAY ON SELF-EFFICACY AND SELF-MANAGEMENT BEHAVIOR IN PATIENTS WITH CEREBRAL INFARCTION

YIPING LIN*

Department of Nursing, Quanzhou First Hospital, Quanzhou, 362002, China

ABSTRACT

Introduction: To analyze the effect of multi-disciplinary Clinical Nursing Pathway (CNP) on self-efficacy and self-management behavior in patients with cerebral infarction.

Materials and methods: 166 patients with cerebral infarction admitted from January 2019 to October 2021 were randomly divided into a conventional intervention group (83 cases) and a multi-disciplinary intervention group (83 cases). The conventional intervention group used usual care in neurology, and the multi-disciplinary intervention group used CNP under the multi-disciplinary collaboration. After 2 months, the symptom self-assessment, stroke rehabilitation self-efficacy, self-management behavior, motor function, neurological function, and living ability were compared between the two groups.

Results: Compared with the pre-intervention results, the anxiety, depression, hostility, terror, paranoia, somatization, psychiatric disorder, coercion, interpersonal relationship, and other scores in the National Institute of Health Stroke Scale (NIHSS) were reduced in both groups, with the results that the overall scores in the multi-disciplinary intervention groups were lower than that of the conventional intervention group ($P < 0.05$). In addition, the self-management efficacy, daily activity efficacy score and total score, safe medication management, disease management, mood management, diet management, rehabilitation and exercise management, social function and interpersonal management, daily life management, Fugl-Meyer Assessment (FMA), Barthel Index (BI) score increased in both groups, with the results that the overall scores in the multi-disciplinary intervention group were higher than that of the conventional intervention group ($P < 0.05$).

Conclusions: The CNP intervention in patients with cerebral infarction with multi-disciplinary cooperation can effectively improve patients' self-efficacy, self-management ability, clinical symptoms, and neurological function, improve patients' motor function and living ability, and can produce good intervention effects.

Keywords: Cerebral infarction, multi-disciplinary, clinical nursing pathway, self-efficacy, self-management behavior.

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Introduction

Cerebral infarction, or ischemic stroke, is one of the most common types of stroke, accounting for 70%-80% of all stroke incidences. Also, it has relatively high rates of recurrence, disability, and mortality, and can lead to the occurrence of body disorders and cause serious impacts on patient's daily life⁽¹⁾. In addition to clinical treatment, nursing is an important auxiliary means to promote the rehabilitation of patients with cerebral infarction. At present, the conventional nursing measures in

this regard lack standardization and continuity, and the application effect is not good in improving the self-management behavior of cerebral infarction patients and promoting the rehabilitation of patients' limb function⁽²⁾. Multi-disciplinary collaboration can promote the effective use of medical resources, and improve patient care services. The Clinical Nursing Pathway (CNP) is a standard care model that takes time as the horizontal axis and executes the patient care process during hospitalization. It has good foresight and pertinence and has good application effects in improving patient self-efficacy and

clinical treatment efficacy. The CNP under the multi-disciplinary collaboration is a new care model that combines the merits of two approaches for nursing intervention for patients⁽³⁾.

The associated research⁽⁴⁾ used it in the clinical care of patients with acute cerebral infarction and found that it could effectively improve the neurological deficit and quality of life. However, the effects of the CNP under the multi-disciplinary collaboration on the self-efficacy and self-management behaviors in patients with cerebral infarction have not been fully elucidated. In this context, this study is to explore the CNP under multi-disciplinary collaboration to analyze the application effects of patients with cerebral infarction.

Materials and methods

General information

166 patients with cerebral infarction admitted from January 2019 to October 2021 were randomly divided into a conventional intervention group (83 cases) and a multi-disciplinary intervention group (83 cases). In the conventional intervention group, the time of onset to presentation is 0.5h to 5 h, on average (2.69 ± 1.17) h, with 48 male cases and 35 female cases. The infarct type⁽⁵⁾ includes 47 cases of single-onset forms and 36 cases of multi-cases with 47 male cases and 36 female cases, and their ages range from 62 to 79, on average (71.82 ± 2.47) years old. In the multi-disciplinary intervention group, the time of onset to presentation is 0.5h to 5 h, on average (2.74 ± 1.22) h, with 47 male cases and 36 female cases. The infarct type includes 48 cases of single-onset forms and 35 cases of multi-cases, and their ages range from 61 to 70, on average (70.24 ± 2.51) years old.

Inclusion and exclusion criteria

Inclusion criteria:

- Meeting the diagnostic criteria for cerebral infarction⁽⁶⁾;

- The time of onset to visit did not exceed 5 h. there are no mental disorders, language disorders, and hearing disorders affecting the study process;

- Patients with no transit treatments;
- No limb dysfunction disease before the onset.

Exclusion criteria:

- Patients with a combined malignancy;
- Patients with a history of brain surgery or trauma;
- Patients who had recently performed an arterial puncture;

- Patients with abnormal coagulation function and liver and kidney dysfunction;
- Patients with severe infectious diseases.

Intervention methods

The conventional intervention group used routine care in the neurology department. After admission, the patients were routinely treated for thrombolysis, anticoagulation and nutritional nerve according to the doctor's advice. After the patient is awake, one-to-one health education was conducted, including the causes of cerebral infarction, common clinical treatment methods and drugs, the occurrence of related complications, and preventive measures. During the patient's hospital stay, the patient received strict dietary management and rehabilitation guidance. In the multi-disciplinary intervention group, the CNP under multi-disciplinary collaboration is used for nursing.

Firstly, forming a multi-disciplinary collaborative care group. The team members mainly include 4 responsible nurses, 1 head nurse of the neurology department, 1 dietitian, 2-bed doctors, 2 rehabilitation teachers and 1 psychological consultant. The head nurse of the neurology department is the group leader to train and manage the team members. The training content mainly includes the significance and steps of CNP implementation, implementation process, and member division of labor. The training was implemented twice per week and 1 h per time in the form of teaching. After the training, the examination will be conducted, and only the passed ones can participate in the implementation of the care program. The head nurse of the department of neurology is responsible for supervising the implementation of the nursing program and the coordination among the members, and the responsible nurse is responsible for the specific implementation of the nursing program. Secondly, conducting a comprehensive assessment. After the patient is admitted to the hospital, the corresponding members of the group made a comprehensive evaluation of the serious condition, illness status, physical function status, psychological status and body nutritional status.

Personalized CNP forms were formulated according to the characteristics of patients' conditions with time as the horizontal axis, and the admission education, doctor's advice, nursing measures, nutrition screening and psychological counseling as the vertical axis. Team members implemented the intervention according to relevant content in the CNP

form and indicated implementation time and the names of the patients. Thirdly, implementing the CNP under the multi-disciplinary collaboration. From day 1 to day after the admission, the patients and their families were educated to guide the family members to position and turn over the patient. Meanwhile, the manual on cerebral infarction disease was sent to family members to popularize disease knowledge to patients and their families. Psychological intervention for patients with pessimistic psychological status was also conducted. A personalized rehabilitation exercise plan was formulated to guide the family members to conduct passive physical training for the patients and to fill in the rehabilitation exercise diary.

The intervention ended 11 days after the patients were admitted, and the patients' condition stabilized and mainly performed limb rehabilitation exercises thereafter. In the following days. The main work is to adjust the personalized rehabilitation exercise plan according to the patients' situation, including strengthening the passive training or increasing the active training content. The main contents are sitting, standing and balance exercises, muscle strength training, walking and coordination training, etc. Then, according to the patients' recovery, the patient for self-care ability training, including dressing, stripping, tying shoelaces, brushing, washing face, toilet, eating, and other daily life skills, was conducted. The main site of active training is a large open training room, most of which patients are trained at the same time to promote communication and support between peers and enhance patients' confidence in recovery.

At the same time, the nutritional status of the patient was evaluated regularly, a personalized recipe was formulated, and the diet was adjusted appropriately with the change in the nutritional status of the patient's body. It is worth noting that both groups were intervened for 2 months.

Observation indicators

Self-assessment of symptoms: before and after the 2 months of intervention, the anxiety, depression, hostility, terror, paranoia, somatization, psychiatric disorder, coercion, interpersonal relationship, and other conditions were evaluated with a total score of 45 points (the higher the score, the more severe the symptoms).

Self-efficacy of stroke rehabilitation: before and after the 2 months of intervention, the patient self-efficacy was evaluated using the Chinese stroke rehabilitation self-efficacy scale⁽⁸⁾, including self-

management efficacy (50 points) and daily activity efficacy (60 points), with a total score of 110 (the higher the score, the better the patient self-efficacy). Self-management behavior: before and after the 2 months intervention, the self-management behavior rating scale⁽⁹⁾ was used to evaluate 7 dimensions of patient safe medication management, disease management, and emotion management, with a total of 50 items (each item has 10 points).

Motor function, neurological function, life ability: before and after the 2 months of intervention, the Fugl-Meyer Assessment (FMA)⁽¹⁰⁾, the National Institute of Health Stroke Scale (NIHSS)⁽¹¹⁾, and the Barthel Index (BI)⁽¹²⁾ were used to evaluate the patients' motor function, neurological function and life ability.

The total scores of the FMA score and BI score were both 100 points (the higher the score, the better the patients' motor function, and life ability). The total NIHSS score was 42 and the higher scores indicate worse neurological functions.

Statistical methods

The data analysis was performed using SPSS 21.0 statistical software, and measurement data were represented by ($\bar{x} \pm s$). An independent sample t-test was used for comparison between groups and paired t-test was used for internal comparisons. Statistical significance was indicated as $P < 0.05$.

Results

Self-assessment comparison of symptoms between the two groups

Compared with the pre-intervention results, the anxiety (A1), depression (A2), hostility (A3), terror (A4), paranoia (A5), somatization (A6), psychiatric disorder (A7), coercion (A8), interpersonal relationship (A9), and other scores (A10) were reduced in both groups, with the results that the overall scores in the multi-disciplinary intervention group (G2) were lower than that of the conventional intervention group (G1) ($P < 0.05$), as shown in Table 1.

Comparison of stroke rehabilitation self-efficacy between the two groups

After the intervention for two months, the self-management efficacy (B1), daily activity efficacy (B2) and total scores (B3) increased in both groups, and the multi-disciplinary intervention group was higher than the conventional intervention group

Time	Group	n	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
Before intervention	G1	83	20.98±2.63	33.08±3.52	18.03±2.63	23.08±2.63	14.73±2.37	26.73±3.27	25.74±3.82	37.53±3.82	28.83±3.72	19.08±2.83
	G2	83	20.68±2.57	33.62±4.03	18.35±2.73	23.46±3.62	14.93±2.63	27.02±3.73	25.83±3.78	37.74±3.59	28.57±3.57	19.17±2.74
	t		0.761	0.941	0.787	0.792	0.527	0.545	0.156	0.374	0.470	0.213
	P		0.448	0.348	0.432	0.429	0.599	0.586	0.876	0.709	0.639	0.831
After intervention	G1	83	18.63±2.10*	29.73±3.92*	15.09±1.73*	16.37±2.19*	11.78±1.84*	19.73±2.63*	18.74±2.67*	31.73±2.78*	23.10±2.63*	17.20±2.10*
	G2	83	15.08±2.00*	22.47±2.64*	12.38±1.93*	13.09±2.05*	10.27±1.23*	17.39±2.19*	15.37±2.47*	23.84±1.83*	18.30±2.10*	14.83±1.92*
	t		11.418	14.328	9.752	10.199	6.284	6.377	8.642	22.112	13.303	7.769
	P		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 1: Self-assessment symptom comparison between the two groups ($\bar{x}\pm s$).

Note: Compared with the scores before the intervention, * $P<0.05$.

Time	Group	n	B1	B2	B3
Before intervention	G1	83	25.47±2.73	24.37±3.02	49.84±5.94
	G2	83	25.73±2.83	24.83±3.92	50.56±7.30
	t		0.617	0.867	0.714
	P		0.538	0.387	0.476
After intervention	G1	83	37.29±4.39*	39.84±5.73*	77.13±6.04*
	G2	83	42.10±4.89*	51.20±6.01*	93.30±9.89*
	t		6.827	12.760	13.015
	P		0.000	0.000	0.000

Table 2: Comparison of self-efficacy of stroke rehabilitation between the two groups ($\bar{x}\pm s$).

Note: Compared with the scores before the intervention, * $P<0.05$.

($P<0.05$), as shown in Table 2.

Comparison of self-management behaviors between the two groups

After the intervention for two months, the safe drug use management (C1), disease management (C2), mood management (C3), diet management (C4), rehabilitation and exercise management (C5), social function and interpersonal management (C6), and daily life management scores (C7) were increased. The multi-disciplinary intervention group was higher than the conventional intervention group

Time	Group	n	C1	C2	C3	C4	C5	C6	C7
Before intervention	G1	83	15.94±1.87	22.37±3.27	15.37±1.72	26.74±3.10	18.94±2.67	16.94±2.61	23.84±2.73
	G2	83	16.03±1.99	22.01±3.82	15.74±1.83	27.03±3.72	19.03±2.83	16.99±2.73	24.01±2.83
	t		0.307	0.668	1.374	0.559	0.216	0.123	0.403
	P		0.759	0.505	0.171	0.577	0.829	0.902	0.687
After intervention	G1	83	19.98±2.10*	30.72±4.37*	18.38±2.03*	31.29±3.82*	26.95±3.10*	22.93±3.28*	27.03±2.93*
	G2	83	25.84±2.73*	34.83±4.38*	20.78±2.73*	34.04±4.10*	31.57±4.03*	27.89±4.10*	31.89±3.82*
	t		15.869	6.196	6.580	4.577	8.475	8.811	9.416
	P		0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 3: Comparison of self-management behaviors between the two groups ($\bar{x}\pm s$).

Note: Compared with the scores before the intervention, * $P<0.05$.

($P<0.05$), as shown in Table 3.

Comparison of motor function, neurological function and life ability between the two groups

After the intervention for two months, the FMA and BI scores were increased in both groups, and the multi-disciplinary intervention group was higher than the conventional intervention group.

The NIHSS score was decreased in both groups, and the multi-disciplinary intervention group was lower than the conventional intervention group

Time	Group	n	FMA	NIHSS	BI
Before intervention	G1	83	35.74±4.39	23.47±3.28	36.36±4.73
	G2	83	35.84±4.73	23.64±3.30	35.99±4.83
	t		0.145	0.341	0.510
	P		0.885	0.734	0.610
After intervention	G1	83	44.83±5.94*	18.37±2.04*	53.29±5.46*
	G2	83	67.84±7.05*	14.83±1.78*	67.84±8.60*
	t		23.281	12.196	13.322
	P		0.000	0.000	0.000

Table 4: Comparison of motor function, neurological function and life ability between the two groups ($\bar{x}\pm s$).

Note: Compared with the scores before the intervention, * $P<0.05$.

($P < 0.05$), as shown in Table 4.

Discussions

Cerebral infarction is a common disease in the clinical neurology department, which is mainly caused by the disorder of blood supply in the local brain area of the patients. Necroptosis of brain tissue in this region can lead to a neurological deficit that can have severe effects on patient limb function. Also, it can induce limb dysfunction and even hemiplegia and have a serious impact on the patient's limb function^(13, 14). Clinical nursing intervention is of great significance to improve limb function and promote the outcome of patients. Routine care in neurology department mainly provides patients with indoctrination-type health education of disease-related knowledge with medication treatment. This method is insufficient with systematic, continuous and normative nursing intervention. In addition, the clinical treatment of patients mainly depends much on the medical staff with few efforts for the improvement of patients' own ability, which is not conducive to the prognosis of patients. Therefore, it is of significance to find a high-quality and practical nursing plan for patients with cerebral infarction to promote their postoperative rehabilitation^(15, 16).

Patients with cerebral infarction often have a long course of the disease and an acute onset, and their lack of cognition of the disease and related treatment methods can lead to poor treatment compliance. At the same time, the occurrence of the disease has a serious impact on patients' activity ability and living ability, which can lead to the occurrence of psychological disorders⁽¹⁷⁾. The results of the present study show that the anxiety, depression, hostility, terror, paranoia, somatization, psychiatric disorder, coercion, interpersonal relationship, and other scores in the multi-disciplinary intervention group were lower than that of the conventional intervention group. And the self-management efficacy, daily activity efficacy score and total score in the multi-disciplinary intervention group are higher than that of the conventional intervention group. This implies that the multi-disciplinary collaboration intervention in patients with cerebral infarction can effectively improve the clinical symptoms and improve self-efficacy. The CNP under multi-disciplinary collaboration conducts targeted multi-disciplinary combinations to improve the patients' cognition of cerebral infarction. At the same time, it is also useful to pay attention to the change of patients' psychological state, and

timely implement psychological intervention to help patients to establish an optimistic, positive and healthy attitudes⁽¹⁸⁾. In addition, the CNP under multi-disciplinary collaboration encourages patients to actively participate in the daily treatment of the disease, and encourages them to try to do something to help them build up confidence and enhance their self-efficacy. Stimulating patients' subjective initiative through peer education during rehabilitation exercise can further improve patients' self-efficacy⁽¹⁹⁾. In rehabilitation exercise, patients' subjective initiative through peer education can further improve patients' self-efficacy⁽¹⁹⁾.

The self-efficacy of patients with cerebral infarction is closely related to their health behavior. The stronger their health behavior awareness and motivation, the more effectively they can maintain their health behavior to increase their self-efficacy. The establishment and maintenance of patients' health behavior are closely related to their self-management behavior. At the same time, improving patients' self-management behavior also helps to improve their motor function, life ability and neurological function recovery⁽²⁰⁾. After the intervention for two months, the safe drug use management, disease management, mood management, diet management, rehabilitation and exercise management, social function and interpersonal management, daily life management scores, FMA scores, and BI scores in the multi-disciplinary intervention group are higher than that of the conventional intervention group. And the NIHSS scores in the multi-disciplinary intervention group are lower than that of the conventional intervention group. This shows that CNP under multi-disciplinary collaboration intervention for patients with cerebral infarction can effectively improve their self-health behavior and improve their neural function, motor function and life ability.

The CNP conducts systematic, standardized and programmed nursing management of patients with evidence-based care. The CNP under multi-disciplinary collaboration intervention gathers multi-disciplinary members, such as nutritionists, doctors, psychological counselors, and rehabilitation therapists, to make CNP plans for patients from their nutritional management, disease treatment, psychological intervention and rehabilitation training, which is conducive to the nursing work in an orderly manner. At the same time, the rehabilitation teachers need to make a rehabilitation plan for the patient together with the family members as per the changes of the patients'

conditions. Encouraging patients to record exercise diaries every day to promote the formation of patients' self-health behavior can improve patients' transportation function and life ability, and promote the improvement of neurological function⁽²¹⁾.

To sum up, the CNP under multi-disciplinary collaboration intervention in patients with cerebral infarction can significantly improve patients' self-efficacy, self-management ability, clinical symptoms, neurological function, and improve patients' motor function and life ability, which is worth clinical promotion.

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Corresponding Author:

YIPING LIN

Department of Nursing, Quanzhou First Hospital, Quanzhou, 362002, China

Email: lypkatty@sina.com

(China)