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The Impact of Follow-up Nursing Combined with Collaborative Nursing Model on Patients after Mechanical Thrombectomy for Acute Cerebral Infarction

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Abstract: *Objective*: To explore and analyze the impact of follow-up nursing combined with collaborative nursing model on patients after mechanical thrombectomy for acute cerebral infarction. *Methods*: A hundred patients with acute cerebral infarction who underwent mechanical thrombectomy in the Department of Neurology, Guangdong Provincial People's Hospital from January 2023 to January 2025 were randomly divided into control group (routine nursing, n=50) and intervention group (follow-up nursing combined with collaborative nursing, n=50). Differences in neurological function, living ability, complication rate, nursing satisfaction, and medication compliance were observed between the two groups. *Results*: After nursing, the intervention group had lower NIHSS and mRS scores, and higher Barthel index scores compared to the control group ($P < 0.05$). Additionally, the intervention group had lower complication and readmission rates, and higher nursing satisfaction and medication compliance scores ($P < 0.05$). *Conclusion*: The combination of follow-up nursing and collaborative nursing model has significant value in improving outcomes for patients after mechanical thrombectomy for acute cerebral infarction, and is worthy of promotion and application.

Keywords: Follow-up nursing; Collaborative nursing; Acute cerebral infarction; Mechanical thrombectomy; Impact value

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1. Introduction

Acute cerebral infarction is a cerebrovascular disease with high incidence and disability rates. Mechanical thrombectomy is the main treatment, but some patients still face risks such as reperfusion injury, revascularization occlusion, and slow recovery of neurological function after surgery [1]. Studies have shown that about 30%–40% of patients after mechanical thrombectomy experience delayed functional recovery or complications due to the lack of systematic nursing support, severely affecting their quality of life [2]. Although routine nursing can provide basic nursing services, it has deficiencies in personalized tracking and multidisciplinary collaboration. In recent years,

follow-up nursing and collaborative nursing models have gradually received clinical attention. Follow-up nursing provides individualized care through patient profiling and regular follow-up visits, while collaborative nursing integrates multidisciplinary resources to develop precise nursing plans for patients. However, the clinical effects and mechanisms of the combined application of the two have not been fully explored [3]. Based on this, this study combines follow-up nursing with the collaborative nursing model, aiming to evaluate its impact on postoperative neurological function recovery, complication prevention, and quality of life. The specific analysis report is as follows.

2. Research methods

2.1. General information

A total of 100 patients with acute cerebral infarction who underwent mechanical thrombectomy in the Department of Neurology, Guangdong Provincial People's Hospital, were included in the study from January 2023 to January 2025. They were randomly divided into a control group (routine care, n = 50) and an intervention group (follow-up care combined with collaborative care, n = 50).

2.2. Inclusion and exclusion criteria

2.2.1. Inclusion criteria

(1) Patients with acute cerebral infarction meeting the diagnostic criteria of the "Guidelines for the Prevention and Treatment of Cerebrovascular Diseases (2024 Edition)" [4].

(2) Confirmed by DSA and received mechanical thrombectomy.

(3) Age 40–85 years old, with complete hospitalization data and follow-up data.

(4) Conscious and able to cooperate with nursing and evaluation.

(5) Complete follow-up data after discharge.

2.2.2. Exclusion criteria

(1) Patients with severe cardiac, liver, or kidney dysfunction.

(2) History of mental illness or severe cognitive impairment.

(3) Expected lifespan < 3 months during follow-up.

(4) Severe dependency status (mRS score > 4).

(5) Missing data or interrupted follow-up.

3. Intervention measures

3.1. Control group

Routine postoperative care was provided, including basic health education. Within 24 hours after surgery, a rehabilitation manual was distributed, and bedside education was conducted for 10 minutes daily to improve patients' disease awareness. Basic follow-up was also performed, informing patients at discharge to return for follow-up visits at 1 and 3 months postoperatively, and providing a 24-hour nursing consultation telephone for regular follow-up on patients' recovery.

3.2. Intervention group

Based on routine care, the following two combined interventions were implemented:

3.2.1. Follow-up care

(1) Nursing plan development: Before discharge, the responsible nurse, rehabilitation therapist, and family members jointly participated in developing a "Personalized Rehabilitation Plan Table" based on the patient's degree of neurological impairment and family support. The plan clarified rehabilitation goals, dietary programs, and exercise intensity.

(2) Remote follow-up management: Phone/WeChat follow-ups were conducted at 1 week, 1 month, and 3 months after discharge (20–30 minutes each time). The follow-up content included: assessing limb function recovery, medication adherence, and blood pressure control; providing remote rehabilitation guidance through video demonstrations of anti-spastic position placement and gait training; for patients with slow progress or poor adherence, adding weekly video guidance to correct rehabilitation movements in real-time [5]; and providing early warning of complications, requiring immediate medical attention if patients experienced dizziness or worsened speech disorders.

3.2.2. Collaborative care

(1) Multidisciplinary team formation: A multidisciplinary team consisting of a neurologist (responsible for disease assessment), rehabilitation therapist (developing exercise programs), nutritionist (designing dietary plans), psychologist (screening for anxiety/depression), and responsible nurse (coordination and execution) was established.

(2) Collaborative intervention process: Weekly team meetings were organized where team members discussed patients' rehabilitation progress and reported specific situations in neurological recovery, medication, psychological status, and nutritional status. The focus was on discussing issues encountered during rehabilitation, such as stagnant neurological recovery, drug side effects, and psychological problems [6]. Additionally, monthly team visits were arranged to assess and adjust nursing plans based on evaluation results. If patients showed slow progress in limb function recovery, the frequency of physical therapy could be appropriately increased from 3 to 5 times per week. Nutritional formulas were adjusted according to patients' nutritional status, increasing the intake of high-protein and high-vitamin foods to promote physical recovery. Personalized psychological support programs, such as regular psychological counseling and psychological rehabilitation training, were provided to address patients' psychological issues.

3.3. Observation indicators

(1) General information (baseline characteristics): age, gender, body mass index (BMI), history of previous diseases (hypertension, diabetes, coronary heart disease), smoking/drinking history, and whether it is the first onset.

(2) NIHSS neurological function score (total score range is 0–42 points, the higher the score, the more severe the neurological deficit); modified Rankin Scale (mRS) score (total score range is 0–6 points, the higher the score, the more severe the dysfunction); Barthel Index score (total score range is 0–100 points, the higher the score, the stronger the self-care ability) [7].

(3) Incidence of common postoperative complications (lung infection, pressure ulcers, recurrent stroke);

nursing satisfaction (survey questionnaire, total score 0–10 points, higher score represents higher satisfaction); medication compliance score (self-developed compliance scoring table, total score 0–10 points, higher score represents higher compliance); readmission rate (follow-up within 3 months after discharge).

3.4. Statistical methods

SPSS 26.0 software was used for analysis. Measurement data were expressed as mean ± standard deviation, and comparisons between groups were performed using the t-test. Count data were expressed as rates, and comparisons between groups were performed using the χ^2 test. A P-value < 0.05 was considered statistically significant.

4. Results

4.1. Comparison of general information

As shown in **Table 1**, there were no statistically significant differences in the baseline data between the intervention group and the control group ($P > 0.05$).

Table 1. Comparison of general information between the two groups [n(%)/x±s,]

Indicator	Intervention group (n=50)	Control group (n=50)	χ^2/t	*P*
Age (years)	57.8 ± 2.6	57.6 ± 2.3	0.407	0.685
Gender (Male/Female, n)	26/24	27/23	0.040	0.847
BMI (kg/m²)	22.8 ± 2.5	22.5 ± 2.2	0.637	0.526
History of hypertension (n, %)	23 (46.00%)	21 (42.00%)	0.162	0.687
History of diabetes (n, %)	14 (28.00%)	15 (30.00%)	0.049	0.826
History of CHD (n, %)	17 (34.00%)	19 (38.00%)	0.174	0.677
Smoking history (n, %)	17 (34.00%)	15 (30.00%)	0.184	0.668
Drinking history (n, %)	7 (14.00%)	9 (18.00%)	0.298	0.585
First onset (n, %)	29 (58.00%)	32 (64.00%)	0.378	0.539

4.2. Comparison of scores

As shown in **Table 2**, after nursing, the intervention group had lower NIHSS scores and mRS scores, and higher Barthel Index scores compared to the control group ($P < 0.05$).

Table 2. Comparison of scores between the two groups (x±s, points)

Group	Cases (n)	NIHSS Score		mRS Score		Barthel Index Score	
		Pre-care	Post-care	Pre-care	Post-care	Pre-care	Post-care
Intervention group	50	28.32 ± 1.67	12.39 ± 1.35	5.78 ± 0.34	2.45 ± 0.15	67.45 ± 3.42	82.34 ± 2.55
Control group	50	28.23 ± 1.35	16.55 ± 1.28	5.69 ± 0.27	3.23 ± 0.24	67.48 ± 3.27	78.24 ± 2.37
t	-	0.296	15.812	1.466	19.488	0.045	8.328
P	-	0.768	< 0.001	0.146	< 0.001	0.964	< 0.001

4.3. Comparison of clinical indicators

As shown in **Table 3**, after nursing, the intervention group had lower complication rates and readmission rates, and higher nursing satisfaction and medication compliance scores compared to the control group ($P < 0.05$).

Table 3. Comparison of clinical indicators between the two groups [n(%)/x±s,]

Group	Cases (n)	Complication rate (%)	Nursing satisfaction (Score)	Medication adherence (Score)	Readmission rate (%)
Intervention group	50	1 (2.00)	9.23 ± 0.56	9.34 ± 0.23	0 (0.00)
Control group	50	7 (14.00)	8.23 ± 0.34	8.17 ± 0.14	4 (8.00)
χ^2/t	—	4.891	10.793	30.726	4.167
P	—	0.027	< 0.001	< 0.001	0.042

5. Discussion

The results of this study demonstrate significant advantages of combining follow-up nursing with collaborative care in the postoperative nursing of patients who have undergone mechanical thrombectomy for acute cerebral infarction. The findings indicate that the intervention group, which adopted this combined nursing approach, showed significant improvements in neurological function recovery (NIHSS score), activities of daily living (Barthel Index), and prognostic functional independence (mRS score) compared to the control group ($P < 0.05$). The notable reduction in NIHSS and mRS scores in the intervention group may be closely related to multidisciplinary dynamic assessment and individualized adjustments. Through weekly meetings and monthly visits, the collaborative care team promptly identifies stagnation in neurological function recovery and adjusts rehabilitation plans accordingly [8]. Continuous remote guidance provided by follow-up nursing ensures the standardization and compliance of patient training, thereby accelerating functional recovery. The improvement in the Barthel Index further confirms the role of combined nursing in promoting patients' self-care abilities, particularly through targeted training for daily activities such as swallowing and toileting, which aligns with previous research findings [9]. Moreover, the intervention group experienced lower complication rates and readmission rates, along with higher nursing satisfaction and medication adherence scores ($P < 0.05$). The lower incidence of complications (such as lung infection and deep vein thrombosis) and readmission rates in the intervention group are attributed to proactive early warning and multidisciplinary collaborative intervention. This "prevention-intervention" closed-loop management model effectively reduces complications, which in turn maintains patient stability and reduces readmissions. The high satisfaction in the intervention group reflects patient recognition of continuous and personalized care. Follow-up nursing enhances nurse-patient trust through regular visits and real-time Q&A, while collaborative care improves patients' treatment confidence through family involvement and psychological support [10]. Improved medication adherence stems from the dynamic management of drug side effects by a multidisciplinary team, aided by medication reminder apps.

6. Conclusion

In summary, the combination of follow-up nursing and collaborative care for patients who have undergone mechanical thrombectomy for acute cerebral infarction demonstrates high clinical effectiveness. It improves

neurological function, enhances daily activities, reduces complications and readmissions, increases medication adherence, and boosts satisfaction, making it a worthwhile approach to adopt.

Disclosure statement

The author declares no conflict of interest.

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