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Analysis of the Impact of Traditional Chinese Medicine Integrated Rehabilitation Nursing Model on the Recovery of Patients with Cerebral Infarction

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Abstract: *Purpose:* This study aims to explore the improvement effect of traditional Chinese medicine combined with comprehensive rehabilitation nursing model on neurological function, daily living ability and psychological state of patients with cerebral infarction. *Methods:* The study selected 100 patients in the recovery stage of cerebral infarction who were treated between January 2023 and January 2025, and were randomly divided into two groups: observation group (receiving rehabilitation care integrated with traditional Chinese medicine, n = 50) and control group (receiving traditional care, n = 50). The control group adopted conventional nursing measures, including condition monitoring and basic rehabilitation training; while the observation group, on the basis of conventional nursing, added acupuncture, traditional Chinese medicine hot compress, acupoint massage, early passive limb training, personalized language rehabilitation, psychological intervention and family collaborative management. The study evaluated the effect of the comprehensive rehabilitation nursing model by comparing the changes in NIHSS scores, Barthel index, SAS scores, SDS scores and APN levels of the two groups of patients before and after intervention. *Results:* After intervention, the NIHSS score (9.24 ± 2.12 vs. 14.53 ± 3.47), Barthel index (72.31 ± 8.62 vs. 55.89 ± 7.26), SAS (38.55 ± 4.79 vs. 46.25 ± 5.13), SDS (40.15 ± 5.36 vs. 48.96 ± 5.83) and APN level (12.57 ± 2.33 μg/mL vs. 8.72 ± 1.95 μg/mL) were significantly better than those in the control group ($p < 0.05$). *Conclusion:* The comprehensive rehabilitation nursing model combined with traditional Chinese medicine can significantly improve the neurological functional potential and quality of life of patients with cerebral infarction, while reducing psychological stress, showing its application prospects in clinical practice.

Keywords: Cerebral infarction; Traditional Chinese medicine rehabilitation nursing; Nursing intervention; Pulmonary infection; Complications

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1. Introduction

As a cerebrovascular disease, cerebral infarction has the highest disability rate. According to statistics, there are more than 2 million new cases in my country every year, and about 70% of the patients will be left with limb dysfunction or cognitive impairment, which greatly affects their quality of life [1]. Although advances in thrombolysis and thrombectomy technology in the acute phase have significantly reduced the mortality rate, patients' neurological deficits still lead to

movement disorders, cognitive impairment, and psychological problems. These factors seriously limit patients' quality of life and ability to return to society [2]. The traditional rehabilitation nursing model mainly relies on passive training and standardized programs, and has problems such as delayed intervention timing, lack of individualization, and insufficient psychological support. These problems have led to prolonged rehabilitation cycles and limited effects [3]. Previous studies have shown that traditional nursing care is often limited to the recovery of basic functions, fails to set dynamic rehabilitation goals according to different stages of the patient's acute phase, recovery phase, and consolidation phase, and lacks collaboration between home and hospital, which reduces patients' rehabilitation compliance after discharge [4]. With the progress of research, personalized rehabilitation nursing models centered on patient needs have gradually attracted attention. This model integrates early training, psychological support and multidisciplinary cooperation, aiming to promote the reconstruction of neurological functions through comprehensive intervention [5]. This study innovatively combines neurological functional rehabilitation with traditional Chinese medicine methods and psychological intervention, providing strong scientific support for the optimization of cerebral infarction rehabilitation strategies.

2. General information

2.1. Basic information

This study recruited 100 patients in the recovery stage of cerebral infarction who were admitted to our hospital between January 2023 and January 2025. All patients met the diagnostic criteria in the "Chinese Guidelines for the Diagnosis and Treatment of Cerebral Infarction".

2.1.1. Inclusion criteria

(1) First cerebral infarction, confirmed by CT or MRI;
(2) Unilateral limb dysfunction, in Brunnstrom stage II-IV;
(3) Clear consciousness, MMSE score ≥ 24 points;
(4) Family members have signed informed consent.

2.1.2. Exclusion criteria

(1) Suffering from malignant tumors or severe cardiopulmonary diseases;
(2) Having a history of mental illness or cognitive impairment;
(3) Unable to participate in the assessment due to aphasia or hearing impairment.

2.1.3. Study design

The patients were divided into observation group and control group by random number table method, with 50 cases in each group. After statistical analysis, there was no significant difference in the baseline data of the two groups of patients ($p > 0.05$). Please see **Table 1** for specific data.

Table 1. Basic information

Group	n	Gender (n)		Age (years)
		Male	Female	
Observation group	50	29	21	56.62 ± 7.13
Control group	50	30	20	56.91 ± 7.08
χ^2/t		0.025		0.300
p		0.874		0.764

2.2. Research methods

2.2.1. Control group

Routine care:

(1) Vital sign observation and drug management, continuous monitoring of vital signs, and standardized implementation of antiplatelet drug treatment.
(2) Health knowledge dissemination: Provide rehabilitation guidelines to patients and organize group health lectures regularly (once a week).
(3) Basic rehabilitation training: 30 minutes of passive joint activities and bed bridge exercises every day to promote the recovery of limb functions.
(4) Post-discharge care: Provide patients with home exercise guidance and support through monthly telephone follow-up visits.

2.2.2. Observation group

Comprehensive rehabilitation nursing plan integrating traditional Chinese medicine: a multidisciplinary approach, jointly with rehabilitation physicians, nursing teams, psychotherapists and patients' families to jointly develop a personalized care plan. The specific content includes:

(1) Phased goal planning

① Acute phase (1–2 weeks): The focus is on preventing the occurrence of complications, adopting anti-spasmodic positions (such as lying on the healthy side), supplemented by acupuncture, low-frequency electrical stimulation to activate dormant neurons, and combined with acupoint massage (such as Zusanli, Quchi). Implement passive joint activities (such as ankle pump exercises, shoulder joint abduction) for 30 minutes every day to prevent muscle atrophy and joint stiffness. The Kubota drinking test is used to evaluate the patient's swallowing function. For patients with swallowing disorders, sticky food is fed in portions to reduce the risk of aspiration. ② Recovery period (3–8 weeks): This stage uses a progressive active training program, combined with mirror therapy (mirror symmetry training for the upper limbs) and resistance band resistance training to improve the patient's movement coordination; at the same time, occupational therapy is used to simulate daily activities such as eating and dressing, aiming to improve the patient's self-care ability. In addition, acupuncture at Zusanli and Quchi points is used to promote local blood circulation, and combined with acupoint massage (such as Dicang and Jieche points) to relieve related symptoms. ③ Consolidation period (9–12 weeks): In this stage, the family-community joint rehabilitation model is adopted. Community follow-up is conducted once a month, and the patient's family members are guided to master the skills of assisted turning and transfer training, and the home environment is adapted to aging (such as installing handrails and laying anti-slip mats). At the same time, the WeChat applet is used to monitor the patient's gait data so that training intensity can be adjusted remotely. In addition, patients are given a personalized walking and cycling program (20–30 minutes each time, three times a week) to improve their cardiopulmonary function.

(2) Personalized language rehabilitation

Based on the patient's aphasia type, a layered training system is constructed, gradually advancing from pronunciation imitation to situational dialogue, and integrating music therapy to assist rehabilitation. The training content includes picture naming and pronunciation repetition (such as from monosyllables "a" and "e" to complete words), and the training difficulty is dynamically adjusted according to the Western Aphasia Scale.

(3) Psychological intervention

Cognitive behavioral therapy (CBT) is implemented twice a week, combined with participatory psychological support from family members, aiming to effectively alleviate the patient's anxiety and depression. In addition, mindfulness-based stress reduction training is conducted twice a week, patient support groups are formed, and successful recovery cases are invited to share experiences. To improve executive function, memory cards and spatial puzzle tasks were designed and performed three times a week for 20 minutes each time.

(4) Rehabilitation of dysphagia

Implement cold stimulation therapy (such as ice cotton swab lightly touching the posterior pharyngeal wall) combined with Shaker training method to enhance the contraction ability of pharyngeal muscles.

(5) Preventive measures for complications

① Pressure ulcer management: Develop a care plan to turn over every two hours, equip with a pressure-reducing mattress, and ensure that the skin is kept clean and dry. ② Deep vein thrombosis prevention: Instruct patients to carry out active or passive activities of the lower limbs, and take anticoagulant drug treatment when necessary.

2.3. Observation indicators

(1) Barthel index (daily living ability), FMA (Fugl-Meyer motor function score).

(2) Mental state: SAS/SDS score (anxiety and depression score).

(3) NIHSS score (neurological function), serum APN level (detected by ELISA method).

2.4. Statistical processing

This study used SPSS version 26.0 statistical software for data analysis, and set the significance level at 0.05. If the p value was less than 0.05, the difference between the groups was considered to be statistically significant. Data description uses statistics such as mean, standard deviation, and percentage, and comparison between groups uses independent sample t test and χ^2 test.

3. Results

3.1. Barthel index, FMA score

It can be seen from the calculation in **Table 2** that compared with the control group, the Barthel index and FMA score of the observation group were higher ($p < 0.05$).

Table 2. Barthel index, FMA score ($\bar{x} \pm s$)

Group	n	Barthel index (points)		FMA score (points)	
		Before care	After care	Before care	After care
Observation group	50	46.37 ± 3.92	72.31 ± 8.62	38.64 ± 9.71	82.39 ± 5.63
Control group	50	46.56 ± 3.21	55.89 ± 7.26	39.05 ± 9.43	65.44 ± 7.22
t		0.234	4.931	0.189	3.807
p		0.816	0.000	0.851	0.000

3.2. SAS, SDS scoring

The calculation results in **Table 3** show that compared with the control group, the SAS and SDS scores of the observation group were lower ($p < 0.05$).

Table 3. SAS and SDS scores ($\bar{x} \pm s$)

Group	n	SAS score (points)		SDS score (points)	
		Before care	After care	Before care	After care
Observation group	50	63.26 ± 10.17	38.59 ± 4.79	62.09 ± 10.16	40.15 ± 5.36
Control group	50	63.71 ± 10.09	46.259 ± 5.13	61.97 ± 10.22	48.96 ± 5.83
t		0.199	4.734	0.042	5.077
p		0.843	0.000	0.967	0.000

3.3. NIHSS score, serum APN level

It can be seen from the results calculated in **Table 4** that compared with the control group, the serum APN level of the observation group increased ($p < 0.05$) and the NIHSS score decreased ($p < 0.05$).

Table 4. NIHSS score, serum APN level ($\bar{x} \pm s$)

Group	n	APN level (μg/mL)		NIHSS (points)	
		Before care	After care	Before care	After care
Observation group	50	6.02 ± 1.34	12.57 ± 2.33	31.29 ± 6.87	9.24 ± 2.12
Control group	50	6.05 ± 1.36	8.72 ± 1.95	31.83 ± 6.44	14.53 ± 3.47
t		1.046	7.933	0.358	7.420
p		0.299	0.000	0.721	0.000

4. Discussion

Cerebral infarction accounts for 70–80% of all stroke cases, and its disability rate is also as high as 60–70%. The patient's risk of recurrence within five years exceeds 40% [6]. With the intensification of population aging, it is expected that the number of patients with cerebral infarction in my country will exceed 3 million by 2030, which will cause huge dual pressures on direct medical expenses and family care costs for the social economy [7]. At present, "early identification, early treatment, and early recovery" has become the core concept of cerebral infarction management. However, the rehabilitation resources of primary medical institutions in my country are relatively scarce, resulting in a rehabilitation interruption rate of up to 45% after discharge. Therefore, there is an urgent need to explore more efficient continuous care solutions [8]. The traditional nursing model focuses on the prevention of complications in the acute phase (e.g., pressure ulcers, deep vein thrombosis) and basic movement training (e.g., passive joint mobility), but lacks specialized intervention targeting neuroplasticity mechanisms in the recovery phase. Research shows that only 23% of patients can persist in completing the rehabilitation program after discharge. The main reasons include psychological barriers (such as anxiety, low self-efficacy), insufficient family support, and lack of personalized guidance [9]. In addition, traditional nursing is insufficient in dealing with non-motor symptoms such as swallowing disorders and cognitive impairment, resulting in about 30% of patients suffering from aspiration pneumonia due to aspiration [10].

In this study, the traditional Chinese medicine integrated rehabilitation nursing model breaks through the single-dimensional limitations of traditional nursing, organically integrates staged rehabilitation goals, family participation and psychological support, and builds a complete closed-loop management system of "assessment-intervention-feedback". For example, combining mirror therapy with resistance band training can simultaneously improve a patient's motor control and muscle strength. In the acute phase (1–2 weeks), the focus of care is to inhibit the occurrence of abnormal movement patterns, such as reducing spasms through good limb positioning, and using acupuncture, traditional Chinese medicine hot compress, acupoint massage, and low-frequency electrical stimulation to activate dormant neurons. Combined traditional Chinese medicine nursing is widely used in various clinical departments. Medical staff adopt individualized traditional Chinese medicine nursing methods according to the specific conditions of patients, such as traditional Chinese medicine hot compress, acupoint massage, psychological care and other methods. Traditional Chinese medicine hot compress is one of the commonly used daily physical therapy methods. It has the effect of penetrating the bones, dispelling wind and cold, and can improve the body's cell vitality and metabolism. It not only has the effect of drug treatment, but also exerts a warming effect, which is beneficial to relaxing muscles, reducing spasms, and promoting the recovery of limb functions. Acupoint massage makes use of the skin's ability to penetrate drugs to smoothen qi and blood; during the recovery period (3–8 weeks), task-oriented training (such as simulating daily activities such as eating and dressing) is used to strengthen

the patient's motor and cognitive functions, and is combined with mindfulness-based stress reduction training to reduce the activity of the amygdala, thereby alleviating anxiety. During the consolidation period (9–12 weeks), this study focuses on the effective connection between home environment optimization (such as laying anti-slip mats and adding handrails) and community rehabilitation resources, aiming to enhance patients' long-term rehabilitation compliance. In the study, serum APN was selected as a biomarker to evaluate the efficacy of rehabilitation. It effectively reduces the inflammatory response by inhibiting the NF-κB pathway, thereby promoting nerve repair; the increase in APN levels shows a significant positive correlation with the improvement of neurological function. Early rehabilitation training can stimulate the reorganization mechanism of the cerebral cortex and accelerate the reconstruction process of synaptic connections. Psychological intervention can help reduce cortisol levels and improve patient compliance, thereby indirectly improving recovery effects. Multidisciplinary teams work closely together: integrating the resources of rehabilitation physicians, nursing teams and patients' families to build a closed-loop management model, effectively reducing the risk of "misuse syndrome". The combined application of mirror therapy and acupuncture jointly promotes patient recovery through the dual mechanisms of regulating cerebral cortex excitability and improving local blood perfusion. Specifically, mirror therapy combined with acupuncture treatment at Quchi point forms a "peripheral-central" dual stimulation mode: the former improves movement coordination by activating the mirror neuron system, and the latter promotes synaptic plasticity by regulating serum BDNF levels. Mindfulness-based stress reduction training not only reduces the activity of the amygdala, thereby alleviating anxiety, but also enhances the prefrontal cortex's ability to regulate motor control. Modifying the home environment, such as installing anti-slip mats, has effectively reduced the incidence of falls at home; and using the WeChat applet for remote monitoring has significantly improved patients' compliance with training.

All in all, the combination of traditional Chinese medicine and rehabilitation nursing can significantly improve the neurological function, daily self-care ability and mental health level of patients with cerebral infarction. It can also reduce the potential for complications and the possibility of recurrence, so it has high clinical application and promotion value.

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Disclosure statement

The author declares no conflict of interest.

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