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The Impact of Regular Follow-Up Intervention on Secondary Prevention and Long-Term Prognosis in Patients with First-Episode Cerebral Infarction

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Abstract: *Objective*: To evaluate the effectiveness of regular follow-up intervention in secondary prevention and its impact on the long-term prognosis of patients with first-episode cerebral infarction. *Methods*: A total of 82 patients with first-episode cerebral infarction were selected and randomly divided into two groups. The experimental group received regular follow-up, while the control group received routine follow-up. The adherence to secondary prevention and long-term prognosis was compared between the two groups. *Results*: The experimental group showed significant differences in indicators such as adherence to secondary prevention and long-term prognosis compared to the control group, with $P < 0.05$. *Conclusion*: Implementing regular follow-up intervention for patients with first-episode cerebral infarction can improve their adherence to secondary prevention and enhance their long-term prognosis, demonstrating high follow-up significance.

Keywords: Regular follow-up intervention; First-episode cerebral infarction; Secondary prevention; Long-term prognosis

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1. Introduction

Cerebral infarction is a severe cerebrovascular condition with a relatively high risk of onset, primarily caused by atherosclerosis. It is characterized by reduced cerebral perfusion and manifestations of brain tissue necrosis in patients [1]. It is marked by high morbidity, disability, mortality, and recurrence rates. Standardized secondary prevention can reduce the risk of recurrence and improve long-term disease outcomes [2]. Regular follow-up interventions can reasonably determine the frequency of follow-ups, comprehensively consider the patient's disease recovery and physical and mental state, and specifically optimize the current follow-up plan to achieve better long-term outcomes. Therefore, this study included 82 patients with first-episode cerebral infarction to evaluate the effectiveness of regular follow-up interventions.

2. Materials and methods

2.1. General information

Eighty-two patients with first-episode cerebral infarction admitted between January 2023 and January 2025 were selected and randomly divided into groups. The basic information between the groups is as follows (**Table 1**).

Table 1. Comparison of basic information between groups (*n*/%, mean ± SD)

Group	n	Gender		Age (years, mean ± SD)
		Male	Female	
Trial Group	41	23 (56.10%)	18 (43.90%)	53.65 ± 4.18
Control Group	41	25 (60.98%)	16 (39.02%)	54.98 ± 4.36
Statistical Value		0.183	-1.410	
P-value		0.669	0.162	

2.2. Methods

The control group received routine follow-up care. One day before the patient's discharge, disease knowledge was explained to the patient using knowledge manuals or promotional videos, and key points of rehabilitation training exercises were demonstrated. Meanwhile, the patient's motor function, disease status, and self-care ability were assessed, with detailed records of the assessment results made. A follow-up manual was then created to facilitate regular updates and dynamic monitoring of the patient's rehabilitation progress. After discharge, follow-up services were provided once a month, with irregular inquiries made about the patient's condition outside the hospital via WeChat groups, along with individualized guidance.

The experimental group received regular follow-up interventions:

(1) Establishment of a follow-up team

The team leader was appointed by the head nurse, responsible for coordinating the work of personnel from multiple departments and defining their specific responsibilities. Follow-up training was also conducted for team members, covering follow-up items, objectives, and record-keeping requirements, to ensure all members mastered relevant skills.

(2) Follow-up frequency

After one week of the patient's discharge, a telephone follow-up was conducted by nursing staff. Within four weeks of discharge, follow-up was carried out once a week for the patient; between four and eight weeks after discharge, follow-up could be conducted once every two weeks, and then changed to once a month thereafter. The patient's WeChat and telephone numbers were recorded, and they were invited to join WeChat or QQ groups, with nursing staff serving as group administrators responsible for conducting weekly group follow-ups. Specialist doctors and nursing staff conducted outpatient follow-ups for the patient once a week and once every four weeks after discharge, followed by follow-ups every three months thereafter. Patients were also informed to seek timely follow-up visits if their condition changed. Led by the head nurse, a team comprising nursing staff, dietitians, rehabilitation therapists, and psychological counselors conducts face-to-face home follow-up visits for patients at 1 week, 4 weeks, and 8 weeks post-discharge, followed by follow-up visits every 3 months thereafter.

(3) Follow-up content

(a) Telephone follow-up: Nursing staff maintain close contact with patients or their family members,

regularly inquiring about the patient's condition outside the hospital and focusing on assessing their self-management abilities regarding their illness. They provide individualized guidance tailored to the nursing issues the patient is currently facing. During telephone follow-ups, nursing staff can use the follow-up center's phone to call the patient's contact information, while also ensuring a 24-hour hotline is available for patients to call anytime with questions.

(b) WeChat follow-up: Once a week, graphical and textual materials or video content related to the initial cerebral infarction are shared in the group. The key points of the shared content are explained in voice or text form, encouraging patients to read or watch the materials in detail to continuously learn about their illness and develop good self-care abilities. Once a week, an online discussion session is organized within the group, encouraging patients to actively share their treatment experiences or nursing feelings. The group administrator summarizes common issues raised by patients and provides answers within the group.

(c) Outpatient follow-up: Specialist doctors and nursing staff inform patients of their scheduled hospital review times via phone, WeChat, or text message, assisting them in completing relevant examination items, explaining the examination results in detail, assessing changes in the patient's condition, and providing clear explanations to patients and their family members so they can fully understand the recovery progress of the illness and recognize the importance of subsequent regular reviews.

(d) Home follow-up: Follow-up team members conduct face-to-face conversations with patients, focusing on assessing their disease recovery, understanding their psychological state, and inquiring about their family and social backgrounds to evaluate their current treatment and care needs. Family members are advised to provide home and social support for the patients. Simultaneously, close communication with family members is strengthened to understand their thoughts and address their questions about treatment and care in a targeted manner. Subsequently, collective discussions are held with patients and their families to jointly establish rehabilitation goals for the next stage, outline implementation plans for these goals, and encourage patients and families to conduct scientific off-hospital care based on the rehabilitation objectives.

(e) Community follow-up: Follow-up team members organize monthly knowledge lectures or patient exchange meetings in the community, inviting first-episode cerebral infarction patients from the same and surrounding communities to participate. During the knowledge lectures, professional knowledge such as medication methods, life skills training, and exercise rehabilitation measures can be explained, and successful treatment cases can be invited to share their individual experiences, focusing on their nursing insights to stimulate patients' subjective initiative. During the patient exchange meetings, fun activities such as knowledge quizzes and nursing skill competitions can be conducted to enhance patients' self-care skills through diverse formats.

(4) Regular monitoring

Nursing staff regularly update patients' follow-up manuals, recording items such as exercise status, medication adherence, relevant examination results, and psychological state. Subsequently, the follow-up team evaluates the execution rate of follow-up tasks, traces nursing responsibilities through an accountability system, analyzes and summarizes follow-up issues, uses brainstorming methods to dissect the causes of problems, and then formulates solutions to optimize subsequent follow-up services.

2.3. Observation indicators

(1) Secondary Prevention Compliance: A self-made compliance questionnaire was used, including items such as adherence to training and medication as prescribed by the doctor, each rated on a 10-point scale. A score exceeding 7 points indicated compliance.

(2) Long-term Prognosis: Follow-up was conducted at 6 months and 1 year, recording the recurrence rate and mortality rate. The ability to perform activities of daily living was assessed using the Barthel Index (BI), which includes items such as toileting and eating, with a total score of 100 points and positive scoring. Neurological function was evaluated using the National Institutes of Health Stroke Scale (NIHSS), which includes items such as level of consciousness and facial paralysis, with a total score of 42 points and negative scoring for neurological function.

2.4. Statistical analysis

Data were processed using SPSS 28.0 software. Measurement values were compared/tested using t-tests, and count values were compared/tested using chi-square (χ^2) tests. Statistical significance was considered when the *P*-value was less than 0.05.

3. Results

3.1. Comparison of secondary prevention compliance between groups

The experimental group demonstrated higher secondary prevention compliance, with a statistically significant difference between groups ($P < 0.05$) (**Table 2**).

Table 2. Comparison of secondary prevention compliance between groups (*n*/%)

Group	n	Adherence to Exercise	Medication Adherence	Dietary Compliance	Regular Follow-up	Psychological Adjustment	Lifestyle Management
Trial Group	41	40 (97.56)	40 (97.56)	39 (95.12)	38 (92.68)	38 (92.68)	37 (90.24)
Control Group	41	34 (82.93)	35 (85.37)	33 (80.49)	31 (75.61)	30 (73.17)	30 (73.17)
χ^2-value		4.987	3.905	4.100	4.479	5.513	3.998
P-value		0.026	0.048	0.043	0.034	0.019	0.046

3.2. Comparison of long-term prognosis between groups

During the follow-up periods of 6 months and 1 year, the experimental group demonstrated superior long-term prognosis, with a statistically significant difference between groups ($P < 0.05$) (**Table 3**).

Table 3. Comparison of long-term prognosis between groups (*n*/%, mean ± SD)

Group	n	Recurrence rate		Mortality		BI score		NIHSS score	
		6 Months	1 Year	6 Months	1 Year	6 Months	1 Year	6 Months	1 Year
Trial Group	41	1 (2.44)	3 (7.32)	0 (0.00)	1 (2.44)	84.56 ± 4.15	92.58 ± 5.21	18.42 ± 2.51	12.05 ± 2.13
Control Group	41	6 (14.63)	10 (24.39)	4 (9.76)	6 (14.63)	88.51 ± 4.13	87.03 ± 5.19	16.39 ± 2.48	14.71 ± 2.17
χ^2/t-value		3.905	4.479	4.205	3.905	-4.320	4.832	3.684	-5.601
P-value		0.048	0.034	0.040	0.048	0.000	0.000	0.000	0.000

4. Discussion

Initial cerebral infarction refers to the first occurrence of cerebral infarction disease, characterized by rapid onset and symptoms such as aphasia or hemiplegia that may significantly progress within minutes or hours. Its etiology is complex, including atherosclerosis, small vessel disease, or cardioembolic sources [3]. Risk factors for the disease include chronic conditions such as diabetes or hypertension, as well as long-term smoking and alcohol consumption. The focus of cerebral infarction management emphasizes acute-phase treatment; however, both healthcare professionals and patients often lack sufficient attention to post-discharge management and rehabilitation. Moreover, cerebral infarction is a primary condition treated in neurology departments of primary hospitals, with most patients coming from rural areas, exhibiting poor compliance and limited knowledge about the disease. Therefore, it is necessary to reduce disease recurrence rates and adverse outcomes such as patient mortality through secondary prevention measures. Currently, China is actively promoting guidelines for the prevention of cerebrovascular diseases. However, due to the advanced age at onset of cerebral infarction, patients' self-care awareness is weak, and treatment compliance is poor, leading to a relatively high recurrence rate. To address this, it is essential to strengthen regular follow-up interventions for patients, enhance their emphasis on secondary prevention, and effectively implement secondary prevention measures to comprehensively improve long-term prognosis [4].

Regular follow-up intervention represents an optimization of conventional follow-up measures, where follow-up services are conducted in a team-based manner, incorporating multidisciplinary professionals such as specialists, rehabilitation therapists, and nutritionists. This approach ensures the scientific rigor and timeliness of follow-up services. Defining the follow-up frequency enables standardized implementation of regular follow-up interventions, allowing for a comprehensive assessment of patients' treatment and rehabilitation status, thereby facilitating reasonable adjustments to the current follow-up intervention content. Diversified follow-up content can enhance patient participation, enabling them to continuously and comprehensively grasp relevant knowledge and engage in refined self-management, thereby reducing the likelihood of recurrence or death [5].

The results indicate that patients in the experimental group demonstrated significantly improved adherence to secondary prevention measures. After 6 months and 1 year of follow-up, the experimental group exhibited lower recurrence and mortality rates, along with higher self-care abilities and less severe neurological impairment, with statistically significant differences between groups ($P < 0.05$). The reason lies in the multidisciplinary nature of regular follow-up interventions, which facilitates efficient teamwork and the sharing of relevant skills and knowledge among team members. This, in turn, enables the provision of high-quality, comprehensive rehabilitation nursing interventions, ensuring that patients can fully acquire self-care skills [6]. In this follow-up process, respecting the individual differences of patients and taking humanistic concepts as the core, a variety of methods such as telephone follow-up, WeChat communication, or knowledge lectures, can be utilized to provide comprehensive guidance to patients, making every effort to meet their individual needs for off-hospital treatment and rehabilitation. With multidisciplinary support, the professionalism of follow-up services has been enhanced, and the preventive awareness of patients can be cultivated through regular communication, significantly boosting their confidence in rehabilitation. This, in turn, stimulates patients' initiative and improves their compliance with secondary prevention measures. Moreover, regular follow-up can improve the collaborative ability between the follow-up team and family members, providing family and social support for patients. It helps family members identify and resolve issues related to off-hospital treatment and rehabilitation, comprehensively enhancing family functioning and enabling patients to actively adapt to their family roles, thereby comprehensively improving

their quality of life. Under the aforementioned regular follow-up, patients' disease recovery outcomes have improved, and they can actively avoid risk factors for recurrence [7]. Furthermore, continuous regular follow-up can continuously enhance patients' life skills and reduce the negative impacts of first-episode cerebral infarction on their physiological state and daily life. As a result, their BI scores increase, and NIHSS scores decrease.

5. Conclusion

In conclusion, regular follow-up interventions can significantly improve the effective compliance of patients with first-episode cerebral infarction with secondary prevention measures, prevent disease recurrence or patient death, and have a positive impact on patients' self-care abilities and neurological functions.

Disclosure statement

The author declares no conflict of interest.

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