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Original Article

Continuity of care and 5E nursing intervention improve neurological function, quality of life, and prognosis for acute ischemic stroke patients

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Abstract: Objective: To evaluate the effect of continuous nursing combined with comprehensive 5E rehabilitation-based nursing intervention on neurological function, quality of life, and prognosis in patients with acute ischemic stroke (AIS). Methods: This retrospective study included 117 AIS patients admitted to TaiHe County People's Hospital between January 2022 and March 2024. Patients receiving routine nursing care from January 2022 to March 2023 were assigned to the conventional care group (56 cases), while those receiving continuous nursing combined with comprehensive 5E rehabilitation-based nursing intervention from March 2023 to March 2024 were assigned to the integrated care group (61 cases). Pre- and post-intervention comparisons were made between the groups regarding neurological function, cognitive ability, physical capability, coagulation status, activities of daily living, quality of life, nursing satisfaction, and prognosis. Additionally, risk factors for poor prognosis in AIS patients were analyzed based on their outcomes. Results: Prior to intervention, there were no significant differences in neurological function, cognitive function, physical function, coagulation status, daily living ability, or quality of life scores between the two groups (all $P>0.05$). After intervention, the integrated care group showed significantly better outcomes in neurological function, cognitive function, physical function, coagulation status, daily living ability, quality of life, nursing satisfaction, and prognosis compared to the conventional care group (all $P<0.05$). Multivariate logistic regression analysis identified older age, high National Institutes of Health Stroke Scale score, elevated serum C-reactive protein and homocysteine levels, and reduced vascular endothelial growth factor levels as risk factors for poor prognosis in AIS patients (all $P<0.05$). Conclusion: The integration of continuity of care with comprehensive nursing intervention based on the 5E rehabilitation framework effectively addresses the rehabilitation needs of AIS patients, significantly improving neurological function, quality of life, and prognosis.

Keywords: Acute ischemic stroke, 5E rehabilitation model, continuing care, comprehensive care, nursing effect

Introduction

Stroke refers to a group of conditions with brain tissue damage caused by cerebral vascular obstruction or rupture, primarily including ischemic stroke and hemorrhagic stroke. Acute ischemic stroke (AIS) is the most common type, accounting for 60-70% of all stroke cases, with a high clinical incidence [1, 2]. AIS is mainly caused by occlusion and stenosis of the vertebral and internal carotid arteries, which is closely associated with factors such as the patient's lifestyle, psychological state, rehabilitation exercise, and medication. AIS has a high clinical disability rate and mortality rate [3, 4]. It leads to varying degrees of impairment in motor and neurological function, severely affecting the patient's ability to care for themselves, their quality of life, and psychological well-being, while also imposing significant pressure on the family and society [5]. The rehabilitation process for AIS is often prolonged, presenting substantial challenges to patients' physical and mental recovery. Effective nursing interventions are crucial for facilitating swift recovery and reintegration into family and social life.

Although traditional nursing interventions can improve AIS patients' conditions, these are influenced by psychological stress, poor compliance, and family dynamics, which can delay the recovery of motor and language functions and

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may not meet the clinical needs of some patients and their families [6, 7]. Therefore, updating nursing concepts and exploring more effective strategies is vital to improving therapeutic outcomes and the quality of life for AIS patients.

The 5E rehabilitation model, introduced by the International Rehabilitation Association in 1994, is a comprehensive rehabilitation strategy comprising five key components: encouragement, education, exercise, employment, and evaluation [8]. Continuity of care refers to ongoing care services from hospital to home, including discharge planning, patient referrals, and continuous follow-up and guidance in home or community settings [9]. Comprehensive nursing intervention is a multidimensional, multilevel approach that fully engages patients in their treatment, encouraging active participation from both patients and their families throughout the nursing process [10]. In recent years, nursing strategies like the 5E rehabilitation model and continuity of care have been widely applied in clinical practice, addressing the shortcomings of traditional nursing methods [11, 12]. However, limited research has explored the effect of continuity of care combined with the 5E rehabilitation model and comprehensive nursing intervention on AIS patients. This study aimed to evaluate the effects of this integrated nursing model on neurological function, quality of life, and prognosis in AIS patients, providing valuable insight for its clinical application.

Materials and methods

Case selection

This retrospective study analyzed 117 AIS patients admitted to TaiHe County People's Hospital between January 2022 and March 2024. Patients receiving standard nursing care from January 2022 to March 2023 were designated as the conventional care group (56 cases). Those receiving continuous nursing integrated with comprehensive nursing intervention based on the 5E rehabilitation model from March 2023 to March 2024 were categorized as the integrated care group (61 cases).

Inclusion criteria

(1) Diagnosis of AIS based on established criteria [13], confirmed by head CT or MRI. (2) First-time hospital admission for treatment. (3) Age >18 years. (4) Conscious and without communication barriers in reading, writing, hearing, and speaking. (5) Complete clinical data.

Exclusion criteria

(1) Life expectancy <6 months. (2) Coagulation or endocrine disorders. (3) History of antibiotic or glucocorticoid use within the past 3 months. (4) Concurrent rheumatoid arthritis or pathological fracture.

This study was approved by the Ethics Committee of TaiHe County People's Hospital.

Nursing approaches

The conventional care group received routine nursing care. Upon admission, patients were provided with educational information about hospital procedures and received nursing care according to physician orders. Nursing staff organized and presented comprehensive information on stroke etiology, clinical symptoms, therapeutic interventions, potential complications, dietary plans, the importance of rehabilitation nursing, and key nursing considerations. This information was delivered using visual aids and health education manuals. Patients were also instructed on maintaining a balanced diet, adhering to prescribed medications, and performing rehabilitation exercises, along with receiving standard discharge instructions.

The integrated care group received continuity of care combined with comprehensive nursing intervention based on the 5E rehabilitation model. The 5E model consists of five components: encouragement, education, exercise, employment, and evaluation, with specific nursing measures outlined as follows:

(1) Encouragement: A rehabilitation nursing team, led by the head nurse, was established, consisting of six nursing staff. The team systematically studied relevant knowledge and completed related assessments. Throughout the patient's hospitalization, the rehabilitation progress was communicated to the patient, encouraging them to actively confront the disease, foster a correct understanding of ischemic stroke, and build confidence in recovery. Family and social support were integrated into the rehabilitation process by encouraging frequent visits and emotional support from family

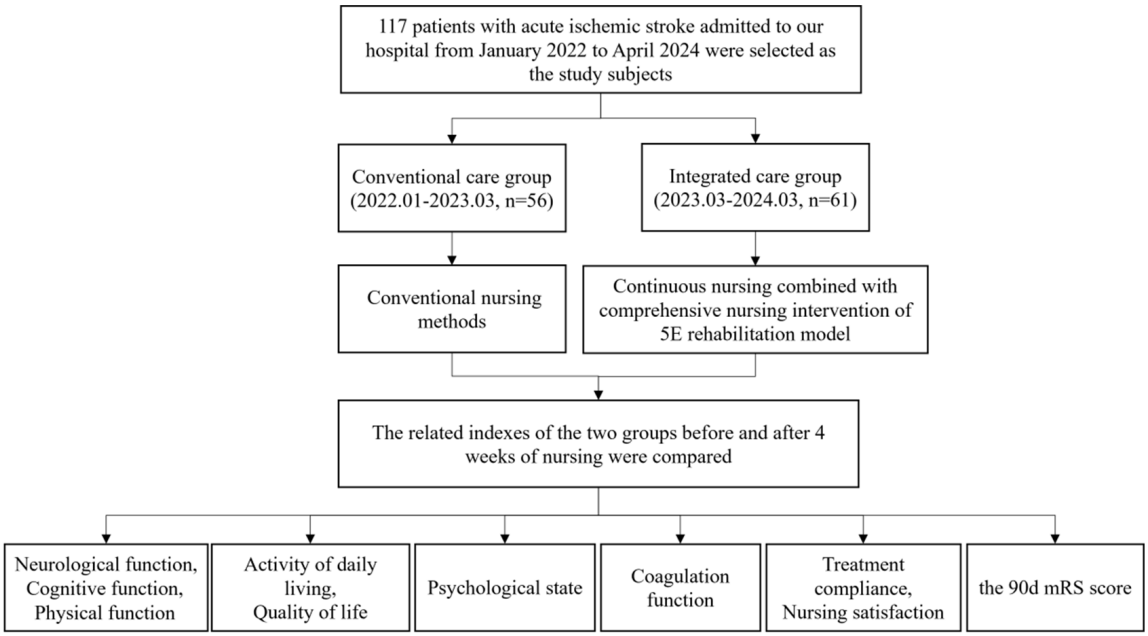

Figure 1. Research flowchart.

members. Clinical case examples were used to strengthen the patient's confidence. After discharge, continuity of care was provided through regular outpatient services, psychological counseling, and fostering an optimistic attitude. Relevant disease information was also shared with discharged patients through online platforms to minimize adverse events.

(2) Education: Tailored health education plans were developed according to each patient's age, education level, and other factors. Patients received detailed information about ischemic stroke, including disease knowledge, medication, balanced diet, rehabilitation exercises, mental health, and intervention methods. Health education brochures were distributed, and patients' understanding of the content was assessed regularly. For patients with poor comprehension, re-education sessions were conducted until full understanding was achieved. After discharge, online communication tools were used to address patient inquiries promptly, with regular outpatient visits and home care services to ensure continuity of care and provide timely advice.

(3) Exercise: In collaboration with nurses and rehabilitation therapists, individualized rehabilitation plans were developed. Once the patient's vital signs were stable, rehabilitation training began, starting with a combination of passive and active functional exercises. After the disease was stabilized, active functional exercises were introduced, progressing from anti-spastic posture adjustments in the supine position to sitting position postural control, bedside sitting balance, bedside rising exercises, sit-to-stand exercises, standing balance exercises, and ultimately gait training.

(4) Employment: During rehabilitation, patients were encouraged to perform daily activities independently, such as washing their face, brushing teeth, wheelchair mobility, eating, and using the toilet. After discharge, family members were instructed to assist the patient in engaging in daily activities such as morning and evening walks or community participation. This approach aimed to help patients develop a sense of purpose and value, enhancing their perception of the significance of their existence.

(5) Evaluation: Weekly assessments were conducted to evaluate the patient's neurological function, muscle strength, and motor abilities. Nursing interventions were adjusted according to the results of these evaluations. Both groups received a 4-week intervention. Pre- and post-intervention changes in treatment adherence, neurological function, and quality of life were compared between the two groups. A study flowchart is shown in **Figure 1**.

Data collection

Primary indicators: (1) Neurological, cognitive and physical function: The National Institutes of Health Stroke Scale (NIHSS) [14] was used to assess the degree of neurological deficit in both groups, with a total score of 42 points. A lower score indicates milder neurological impairment.

Montreal Cognitive Assessment (MoCA) [15] assessed cognitive function, with a total score of 30 points. A lower score reflects poorer cognitive performance.

Fugl-Meyer Assessment (FMA) [16] was used to evaluate motor function, with a total score of 100 points. A higher score signifies better motor function.

(2) Activity of daily living and quality of life: The Barthel Index [17] was employed to assess the ability to perform activities of daily living, with a total score of 100 points. A higher score indicates better ability to manage daily activities.

Stroke-Specific Quality of Life (SS-QOL) Scale [18] evaluated quality of life, with a score range from 49 to 245 points. A higher score indicates better quality of life.

(3) Prognosis: The modified Rankin Scale (mRS) score after 90 days of intervention was used to assess patient prognosis. The score ranges from 1 to 6 points: 0-2 points indicate good quality of life; 3-5 points indicate poor quality of life; 6 points indicate death.

The good prognosis rate was calculated as the number of good cases divided by the total number of cases. Mortality rate was calculated as the number of deaths divided by the total number of cases.

Secondary indicators: (1) Coagulation function: Fasting venous blood samples were collected before and after the nursing intervention. Prothrombin time (PT), thrombin time (TT), and activated partial thromboplastin time (APTT) were measured using a Sysmex fully automated coagulation analyzer.

(2) Psychological state: The Memorial University of Newfoundland Scale of Happiness (MUNSH) [19] was used to assess patients' well-being, measuring both positive experiences (0 to 24 points) and negative experiences (0 to 24 points). A higher score in positive experiences indicates better happiness, while a lower score in negative experiences suggests better well-being.

(3) Nursing satisfaction: Patient satisfaction was assessed using a self-designed Nursing Satisfaction Scale, with a total score of 100 points. Higher scores indicate greater satisfaction with nursing care. The satisfaction categories were: Highly Satisfied: ≥90 points; Satisfied: ≥70 points; Fairly Satisfied: ≥60 points; Dissatisfied: <60 points.

The overall satisfaction rate was calculated as (highly satisfied + satisfied + fairly satisfied)/ total number of cases * 100%.

(4) Analysis of risk factors for poor prognosis: According to the prognosis of patients, multivariate Logistic: Multivariate logistic regression was used to analyze risk factors for poor prognosis in AIS patients based on their outcomes. Factors analyzed included age, body mass index (BMI), hypertension, diabetes, smoking, alcohol use, admission NIHSS score, levels of fasting blood glucose (FPG), C-reactive protein (CRP), plasma homocysteine (Hcy), and vascular endothelial growth factor (VEGF).

Statistical methods

All data were processed using SPSS 26.0 statistical software. Quantitative data conforming to a normal distribution were expressed as mean ± standard deviation and analyzed using the t-test. Quantitative data not conforming to a normal distribution were expressed as median and interquartile range and analyzed using non-parametric tests. Categorical data were expressed as counts and percentages and analyzed using the chi-square test. The rank sum test was used for grade data, and logistic regression was used for prognostic factor analysis. The significance level was set at $\alpha=0.05$.

Results

Comparison of Baseline data

The two groups were compared for general data such as gender, age, hospital stay, type of infarction, onset time, and comorbid hypertension, with no significant differences (all $P>0.05$), indicating comparability (**Table 1**).

Table 1. Basic information of the two groups of patients

Item		Conventional care group (n=56)	Integrated care group (n=61)	χ^2/Z	P
Age, year, M (P_{25}, P_{75})		67 (56, 73)	68 (57, 74)	-0.726	0.468
Hospital days, d, M (P_{25}, P_{75})		9 (8, 10)	8 (7, 10)	-1.749	0.080
Onset time, h, M (P_{25}, P_{75})		13 (12, 14)	13 (12, 14)	-0.376	0.707
Sex, n (%)	Male	34 (60.71)	41 (67.21)	0.536	0.464
	Female	22 (39.29)	20 (32.79)		
Infarct pattern, n (%)	Arteriae cerebrales	52 (92.86)	52 (85.25)	1.742	0.419
	Basal ganglia	2 (3.57)	4 (6.56)		
	Others	2 (3.57)	5 (8.20)		
Hypertension, n (%)	Yes	40 (71.43)	45 (73.77)	0.081	0.776
	No	16 (28.57)	16 (26.23)		

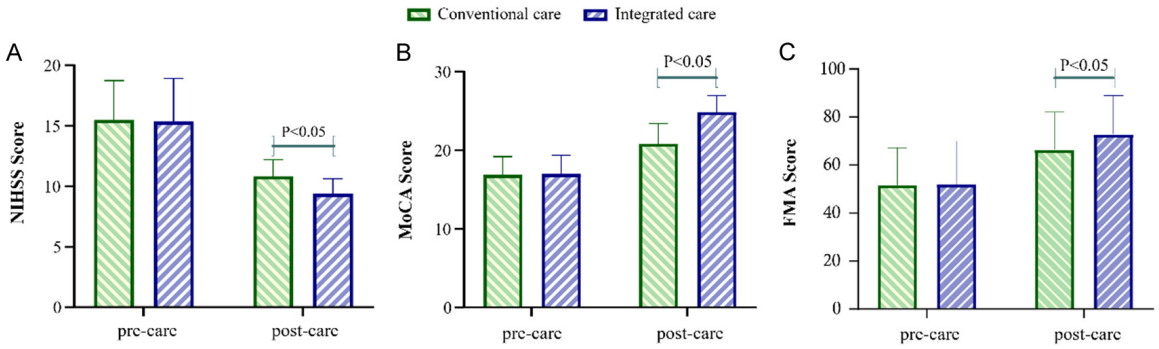

Figure 2. The nerve, cognition and physical function. A: NIHSS Score; B: MoCA Score; C: FMA Score. NIHSS, National Institutes of Health Stroke Scale; MoCA, Montreal Cognitive Assessment; FMA, Fugl-Meyer Assessment scale.

Comparison of neurological, cognitive, and physical function before and after nursing care

Before nursing care, there were no significant differences in NIHSS, MoCA, or FMA scores between the conventional care and integrated care groups (all P>0.05). After nursing care, the integrated care group showed significantly lower NIHSS scores and higher MoCA and FMA scores compared to the conventional care group (all P<0.05) (**Figure 2**).

Comparison of coagulation function before and after nursing

Before nursing care, there were no significant differences in coagulation function between the two groups (all P>0.05). After nursing care, PT, TT, and APTT levels significantly increased in both groups, with the integrated care group showing higher values than the conventional care group (all P<0.05) (**Figure 3**).

Comparison of activity of daily living and quality of life before and after nursing

Before nursing care, there were no significant differences in daily living ability or quality of life between the two groups (both P>0.05). After nursing care, both SS-QOL scores and Barthel Index scores showed significant improvement in both groups, with the integrated care group achieving better results than the conventional care group (both P<0.05) (**Figure 4**).

Comparison of psychological state before and after nursing

Before nursing care, there was no significant difference in the psychological state between the two groups (P>0.05). After nursing care, both groups showed higher scores in positive experiences and lower scores in negative experiences compared to baseline (P<0.05). Additionally, the integrated care group demon-

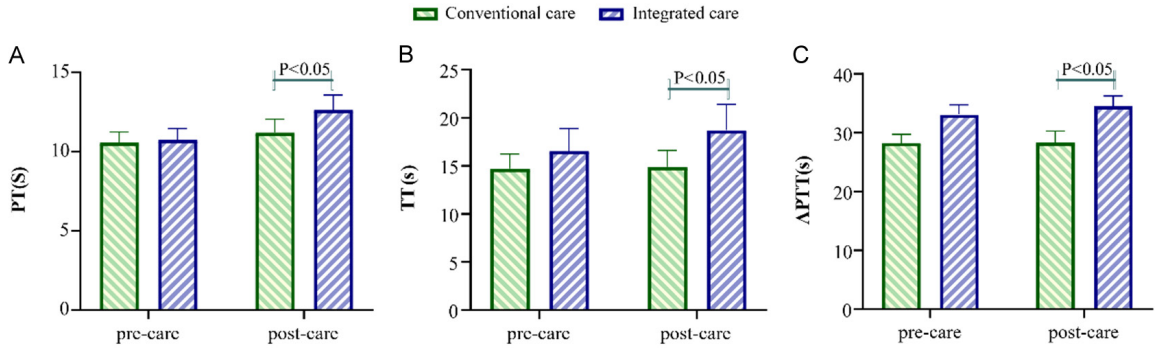

Figure 3. Coagulation function. A: PT; B: TT; C: APTT. PT, Prothrombin time; TT, thrombin time; APTT, activated partial thromboplastin time.

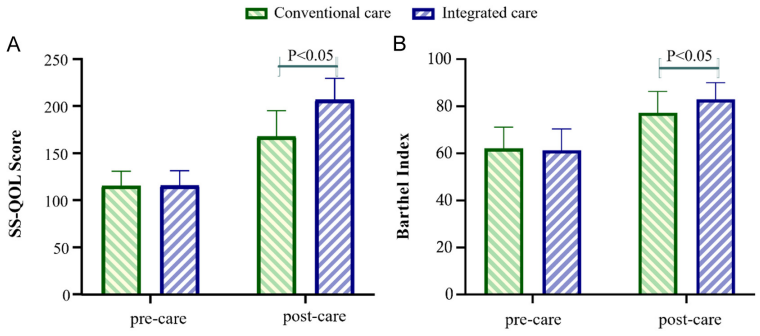

Figure 4. Activity of daily living and quality of life. A: SS-QOL Score; B: Barthel Index. SS-QOL, Stroke-Specific Quality of Life.

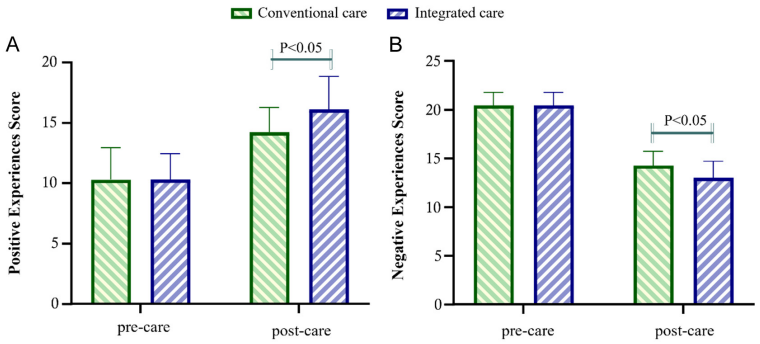

Figure 5. Patients' psychological state. A: Positive Experiences Score; B: Negative Experiences Score.

strated a better psychological state than the conventional care group (P<0.05) (**Figure 5**).

Comparison of patient nursing satisfaction

After 4 weeks of nursing care, the overall satisfaction rate in the conventional care group was 82.14%, while the integrated care group achieved a satisfaction rate of 95.08%. This difference was significant (Z=-2.521, P=0.012, **Figure 6**).

Prognosis of patients

After 90 days of intervention, the good prognosis rate in the integrated care group was 78.69%, compared to 60.71% in the conventional care group (P<0.05). The mortality rate in the integrated care group was 3.28%, while the conventional care group had a mortality rate of 10.71%. The difference in mortality was not significant (P>0.05, **Table 2**).

Analysis of risk factors for poor prognosis in AIS patients

Based on the prognosis data from Section 2.6, AIS patients were divided into two groups: a poor prognosis group (PP group, 35 cases) and a good prognosis group (GP group, 82 cases). Significant differences were observed in age, NIHSS, FPG, CRP, Hcy, and VEGF between the two groups (all P<0.05, **Table 3**).

Logistic regression analysis, using prognosis (1 = poor prognosis, 0 = good prognosis) as the dependent variable and age, NIHSS, FPG, CRP, Hcy, and VEGF as independent variables, revealed that older age, higher NIHSS score, elevated serum CRP and Hcy levels, and de-

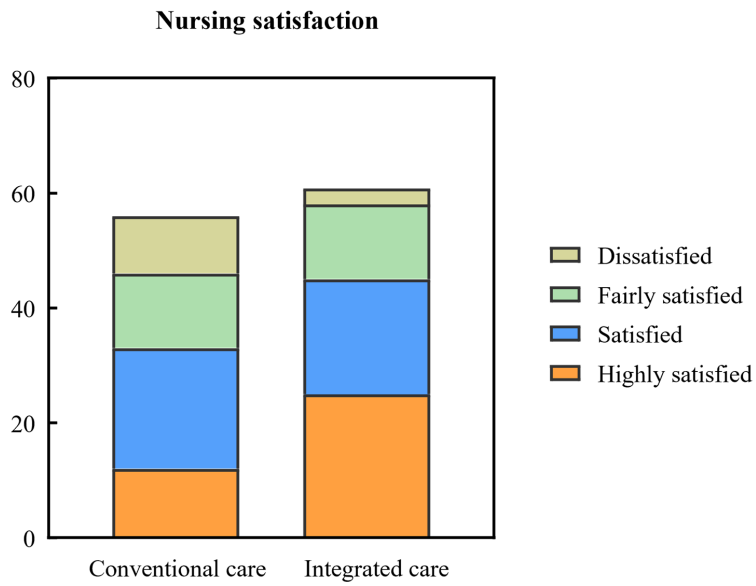

Figure 6. Nursing satisfaction.

creased VEGF levels were significant risk factors for poor prognosis in AIS patients (all P<0.05, **Table 4** and **Figure 7**).

Discussion

Acute ischemic stroke (AIS) often leads to trunk and limb dysfunction, reducing patients' ability to participate in activities of daily living, such as eating, drinking, moving, using the toilet, personal hygiene, dressing, and grooming. These limitations often require assistance from others and severely impact quality of life [20, 21]. Timely nursing intervention post-stroke is critical for helping survivors regain function and prevent or delay complications and functional decline. Relevant guidelines recommend providing early rehabilitation services for hospitalized stroke patients within an organized, multiprofessional stroke care environment [22, 23]. Our study found that continuity of care combined with comprehensive nursing interventions based on the 5E Rehabilitation Model demonstrated positive effects in the care of AIS patients.

Compared to conventional nursing care, the continuity of care based on the 5E Rehabilitation Model combined with comprehensive nursing intervention led to significant improvements in neurological, cognitive, and physical function in AIS patients. This finding is consistent with those of Lu et al. [24]. Under the traditional nursing model, inpatient rehabilitation for stroke patients often receives more attention and resources, whereas home rehabilitation nursing remains relatively underdeveloped. Due to the lack of professional knowledge among family caregivers, home-based rehabilitation outcomes tend to be suboptimal [25]. Studies have indicated that nurse-led health coaching should be incorporated into routine hospital-to-home transition care for stroke survivors and their caregivers [26].

In this study, we implemented a comprehensive nursing model that included nurse-led health guidance interventions. Tailored to the individual conditions of each patient, personalized health education plans were developed to help patients and their families gain a deeper understanding of the disease and the complexities of the recovery process. Additionally, impairments in sensory-motor function, particularly limitations in balance and gait, have been identified as key factors contributing to post-stroke disability and a decline in quality of life [27]. Appropriate exercise interventions can reduce the risk of falls in post-stroke patients, and well-designed exercise therapy has proven effective in improving balance limitations in chronic stroke patients [28, 29]. In this comprehensive nursing model, patients gradually transitioned from passive to active training with the assistance of nurses and rehabilitation therapists, effectively promoting the recovery of motor function. The rehabilitation nursing guidance continued from the hospital to the home, providing comprehensive support and significantly improving neurological function, cognitive ability, and motor function of the limbs.

AIS often leads to secondary coagulopathy, characterized by the abnormal release of clotting substances that form thrombi, further exacerbating the condition. Coagulation indicators such as PT, APTT, and TT reflect the coagulation status of patients. Previous studies have

Table 2. Prognosis of both groups of patients [n (%)]

Group	Case number	Good prognosis	Poor prognosis	Death	Good prognosis rate	Mortality
Integrated care group	61	48 (78.69)	11 (18.03)	2 (3.28)	78.69%	3.28%
Conventional care group	56	34 (60.71)	16 (28.58)	6 (10.71)	60.71%	10.71%
χ^2					4.499	2.534
P					0.034	0.111

Table 3. Analysis of risk factors [n (%), (mean ± SD)]

Factor	PP group (n=35)	GP group (n=82)	t/χ^2	P
Age/years			8.582	0.003
≥60	24 (68.57)	32 (39.02)		
<60	11 (31.43)	50 (60.98)		
BMI (kg/m^2)	22.56±2.13	22.81±2.05	0.596	0.552
Smoking history			1.145	0.285
Yes	20 (57.14)	38 (46.34)		
No	15 (42.86)	44 (53.66)		
Drinking history			0.069	0.793
Yes	18 (51.43)	40 (48.78)		
No	17 (48.57)	42 (51.22)		
Hypertension			2.948	0.086
Yes	21 (60.00)	35 (42.68)		
No	14 (40.00)	47 (57.32)		
Diabetes			0.620	0.431
Yes	19 (54.29)	38 (46.34)		
No	16 (45.71)	44 (53.66)		
NIHSS score	18.63±2.06	15.37±2.07	7.819	<0.001
FPG (mmol/L)	7.93±1.14	7.24±1.25	2.836	0.005
CRP (mg/L)	11.87±1.53	10.38±1.48	4.943	<0.001
Hcy (μmol/L)	23.47±3.27	21.39±2.75	3.548	<0.001
VEGF (ng/mL)	3.53±0.76	4.32±0.89	4.568	<0.001

Note: PP group, poor prognosis group; GP group, good prognosis group; BMI, Body Mass Index; NIHSS, NIH stroke scale; FPG, fasting blood glucose; CRP, C-reactive protein; Hcy, Homocysteine; VEGF, Vascular Endothelial Growth Factor.

Table 4. Multiple logistic regression

Factors	*B*	*S.E.*	*Wald* χ^2	*P value*	*OR (95% CI)*
Age	1.915	0.814	5.531	0.019	6.784 (1.376-33.453)
NIHSS	0.846	0.233	13.179	<0.001	2.329 (1.476-3.677)
FPG	0.428	0.319	1.795	0.180	1.534 (0.820-2.868)
CRP	0.957	0.309	9.627	0.002	2.605 (1.423-4.768)
Hcy	0.284	0.129	4.846	0.028	1.329 (1.032-1.712)
VEGF	-1.472	0.486	9.173	0.002	0.230 (0.089-0.595)
Constant	-30.708	7.849	15.306	<0.001	-

Note: NIHSS, National Institutes of Health Stroke Scale; FPG, fasting blood glucose; CRP, C-reactive protein; Hcy, plasma homocysteine; VEGF, vascular endothelial growth factor.

identified shortened APTT as an independent risk factor for neurological deterioration following AIS [30, 31]. In this study, we observed that under the integrated nursing care model, coag-

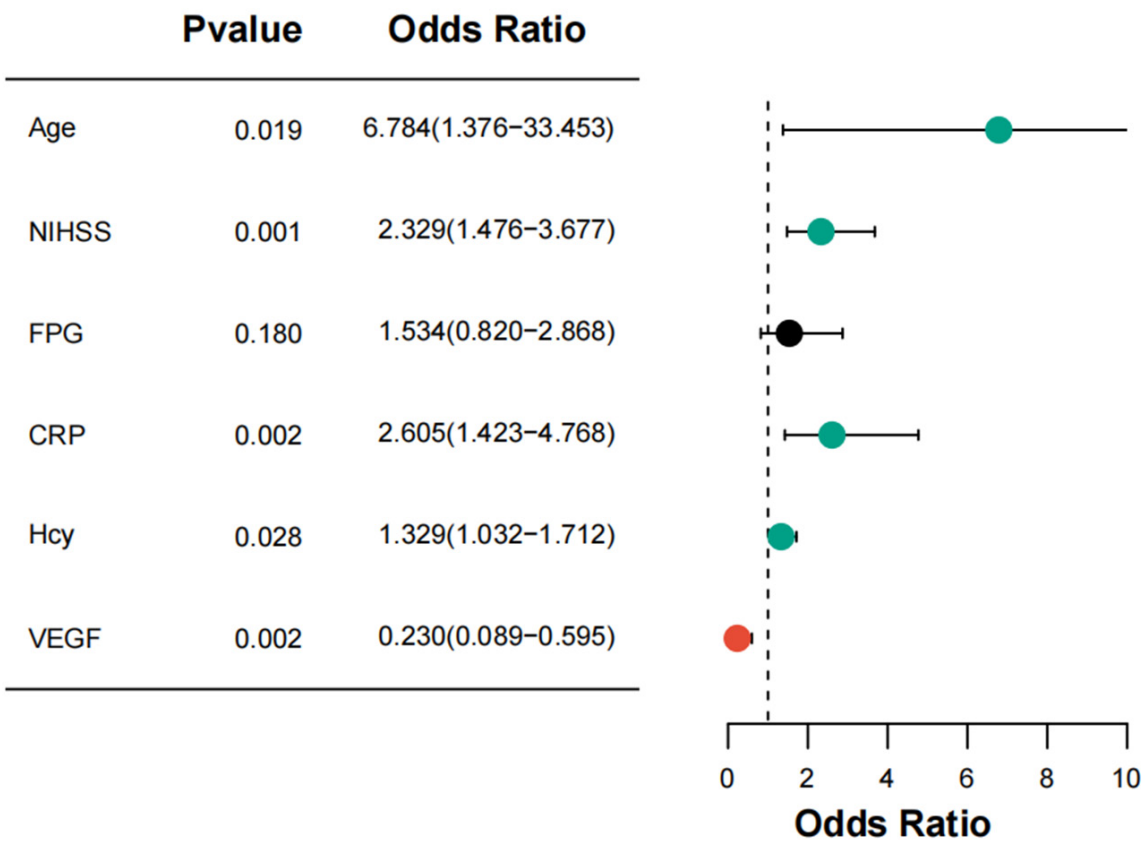

Figure 7. Risk factor forest plot.

ulation function indicators in the integrated care group improved significantly. Through more detailed and systematic medication education, particularly regarding the correct use of anticoagulant drugs, patients were more likely to adhere strictly to medical advice, taking anticoagulant medications on time and at the correct dosage, thereby enhancing the anticoagulant effect. Furthermore, continuity of nursing care after discharge, including outpatient services and online information support, provided more precise monitoring and management, further improving therapeutic outcomes and prognosis.

We also found that the continuity of care based on the 5E rehabilitation model, combined with comprehensive nursing interventions, effectively improved the daily living abilities and quality of life of patients with AIS, facilitating a faster recovery to normal life. Feng et al. [32] also observed that an integrated hospital-community service model meets the home care needs after discharge, enhances post-discharge quality of life, and reduces family burdens. Nurses encourage patients to complete meaningful tasks, achieve favorable functional outcomes, and play a central role in AIS rehabilitation [33]. Research has shown that stroke rehabilitation training led by specialists not only boosts rehabilitation enthusiasm and self-efficacy but also alleviates the psychological burden on patients and caregivers, significantly benefiting patients' self-care ability and quality of life [34]. Medical staff provide nursing care tailored to the specific conditions of the patients, making the nursing model more scientific and systematic with multi-faceted interventions. Psychological counseling alleviates patients' fear of the disease, enhances treatment compliance, improves self-management, and aids in restoring social functions. Through continuous nursing, family members received guidance on post-discharge precautions, greatly improving the patient's quality of life.

Additionally, we found that the sense of happiness among patients in the integrated care

group was higher than that in the conventional care group. It is evident that nursing staff, aided by internet information and communication technology, have overcome the spatial and temporal limitations of traditional face-to-face education [35]. Continuous, in-depth learning of disease knowledge fosters health belief motivation, enabling patients to maintain a positive and optimistic attitude toward the disease. This helps patients transform negative emotions into positive ones, thereby enhancing their self-perception of happiness [36].

The integrated care group showed significantly better prognosis outcomes compared to the conventional care group, consistent with previous research findings [37]. In AIS nursing, traditional models often lack comprehensive discharge plans and timely follow-up, leading to unmet nursing needs for patients and caregivers, which affects their ability to cope with disease progression [38, 39]. The continuity of care based on the 5E rehabilitation model, combined with comprehensive nursing interventions, provided continuous support post-discharge through regular outpatient services, psychological counseling, and the use of modern tools like the internet. This significantly enhanced self-management abilities and treatment adherence. Personalized health education plans covering disease knowledge, medication guidance, and rehabilitation methods further deepened understanding of the disease and recovery process, enabling patients and families to more actively engage in the treatment plan, thereby improving prognosis.

This study further revealed that advanced age, a high NIHSS score, elevated serum CRP and Hcy levels, and decreased VEGF levels were risk factors for poor prognosis in AIS patients. Ding et al. [40] confirmed the correlation between age, NIHSS score, and AIS prognosis. As age increases, elderly AIS patients experience organ aging, decreased physiological function, and reduced recovery ability, along with comorbid chronic diseases, all of which increase the risk and severity of stroke and contribute to poor prognosis [41]. The NIHSS score is commonly used to assess neurological impairment in AIS patients, including consciousness, visual, and motor functions. A higher NIHSS score indicates more severe neurological impairment, leading to worse prognosis [42]. CRP is an inflammatory marker, and elevated levels typically signal an ongoing inflammatory response in the body. In stroke patients, high CRP levels are closely associated with inflammation, vascular injury, and poor prognosis [43]. Plasma Hcy, a metabolite of sulfur-containing amino acids, can damage vascular endothelial cells, stimulate smooth muscle cell growth, and contribute to atherosclerosis. High Hcy levels in AIS patients are linked to thrombosis, endothelial dysfunction, and oxidative stress, negatively affecting prognosis [44]. Serum VEGF is a highly specific vascular endothelial growth factor that promotes vascular permeability, endothelial cell migration, proliferation, and angiogenesis. VEGF plays a crucial role in cerebral blood flow recovery and nerve repair after stroke. Decreased VEGF levels may impair brain tissue repair and regeneration, leading to poor prognosis [45]. Identifying these risk factors is essential for clinicians to accurately assess prognosis and develop personalized treatment plans. For example, elderly patients may require more attention to chronic disease management; patients with elevated CRP or Hcy may benefit from anti-inflammatory or Hcy-lowering treatments; and patients with low VEGF levels may need angiogenesis-promoting therapies to improve prognosis while reinforcing continuous care through the 5E rehabilitation model.

In addition to the above findings, we also discovered that the continuity of care based on the 5E rehabilitation model, combined with comprehensive nursing interventions, was well-received by patients and significantly improved their satisfaction, a conclusion supported by the study of Xue et al. [46]. Under the comprehensive nursing model, we established a professional nursing team to ensure the provision of high-quality services during hospitalization through systematic learning and rigorous assessment. Research indicates that nurse-led health coaching is essential in facilitating the smooth transition of stroke survivors and their caregivers from hospital to home [47]. Our continuity of care strategies ensured that patients received ongoing support and professional guidance after discharge. By regularly assessing and adjusting the nursing plans, we continuously optimized the service process to meet the personalized needs of patients. These measures not only deepened patient trust in

the nursing team but also significantly enhanced satisfaction among patients and their families with the care provided.

In conclusion, the model integrating continuity of care based on the 5E rehabilitation model with comprehensive nursing interventions effectively addressed the rehabilitation needs of AIS patients, improves their neurological function, quality of life, and prognosis, and is worthy of clinical implementation. However, there are limitations in this study. Due to the limited sample size and short follow-up period, the results may not fully reflect the changes in patients' conditions. Future studies should extend the intervention period and use large-sample, multicenter data to further validate its clinical value.

Disclosure of conflict of interest

None.

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