

Application of Comprehensive Nursing Intervention in Elderly Patients with Post-stroke Epilepsy

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Abstract: Objective To investigate the efficacy of comprehensive nursing intervention in elderly patients with post-stroke epilepsy. Methods A total of 2,025 elderly patients with post-stroke epilepsy admitted to our hospital from January 2025 to December 2025 were selected. Randomly, 78 patients were divided into two groups: the comprehensive nursing group (intervention group, n=39) and the conventional nursing group (control group, n=39). The control group received conventional neurological nursing, while the intervention group received comprehensive nursing. Evaluation indicators included the National Institute of Health Stroke Scale (NIHSS), Activities of Daily Living (ADL) scores, Mini-Attitude Scale (MAS) scores, hospitalization duration, patient satisfaction rate, and clinical efficacy before and 3 months after intervention. Results After intervention, the NIHSS scores in the intervention group were significantly lower than those in the control group ($P<0.05$). The ADL scores and MAS scores in the intervention group were significantly higher than those in the control group ($P<0.05$). Compared with baseline values, the NIHSS scores in the intervention group were lower after intervention, while the ADL scores and MAS scores were higher after intervention, with statistically significant differences ($P<0.05$); hospitalization days in the intervention group (15.79 ± 2.48) Less than the control group (21.92 ± 2.40), with statistically significant differences ($P<0.05$); the satisfaction rate in the intervention group (89.75%) was higher than that in the control group (69.23%), with statistically significant differences ($P<0.05$); the improvement in seizure frequency and duration in the intervention group was superior to that in the control group, with statistically significant differences ($P<0.05$). Conclusion: Comprehensive nursing interventions should be implemented for post-stroke epilepsy to significantly improve clinical efficacy and patient satisfaction.

Keywords: Neurology; Stroke; Epilepsy; Comprehensive Nursing.

1. Introduction

Post-stroke epilepsy (PSE) refers to epilepsy caused by persistent cerebral changes that lead to epileptic seizures following a stroke. Clinically, it is diagnosed in patients without prior epilepsy history who develop seizures within a certain period after the stroke, with EEG findings consistent with the stroke location, and after excluding epilepsy caused by other structural abnormalities or metabolic factors.[1]With the global aging population and rising incidence of stroke, the number of patients with PSE is expected to increase accordingly. Cerebrovascular diseases will also become the most common cause of epilepsy in middle-aged and elderly individuals, with an incidence rate of 10%–14%. Post-stroke epilepsy accounts for approximately 50% of new-onset epilepsy cases in individuals aged 60 and above.[2,3]Most of these patients have complex conditions and prolonged disease courses, with widespread functional impairments. Consequently, they generally experience low quality of life and emotional distress, posing significant challenges to both their daily living and family caregiving. With the advancement of Chinas healthcare system, comprehensive nursing interventions have become the core and essence of nursing practice. The primary objective of such interventions is to provide patients with a comfortable treatment environment and deliver meticulous, high-quality care. [4] Elderly patients with post-stroke epilepsy require not only specialized medical intervention but also comprehensive and meticulous nursing support. As a multidimensional and interdisciplinary collaborative nursing model, integrated nursing intervention has been demonstrated to be effective for patients with chronic conditions such as stroke and hypertension.[5,6]This nursing model not only addresses

patients physiological needs but also emphasizes their psychological state, social adaptability, and the establishment of family support systems. However, comprehensive nursing interventions have been rarely applied in elderly patients with post-stroke epilepsy. Therefore, this study explores the efficacy of comprehensive nursing interventions in patients with post-stroke epilepsy, aiming to provide reference for clinical practice.

2. Clinical Data and Methods

2.1. General Information

A total of 78 elderly patients with post-stroke epilepsy were enrolled from January 2025 to December 2025 in our hospital. All patients met the diagnostic criteria for post-stroke epilepsy. [7] Inclusion criteria: Age <75 years; all cases were diagnosed with stroke via cranial MRI and CT. [8] Epileptic seizures occurring once or more than once within 2 weeks after stroke; informed consent was obtained for participation in this study. Exclusion criteria included: presence of cognitive impairment; patients with respiratory failure, hepatic or renal insufficiency, or active liver disease; drug-resistant malignant hypertension, malignant tumors, or congestive heart failure; and brain diseases such as cerebral parasitic infections, cerebral aneurysms, or traumatic brain injuries. A total of 78 patients were randomly divided into a control group and an experimental group, with 39 cases in each group. The age range was 61–73 years, with a mean age of (66.9 ± 5.5) years. Comparisons of gender, stroke type, and seizure type between the two groups of epileptic patients showed statistically significant differences ($P>0.05$) via chi-square test, indicating comparability, as shown in Table 1.

Table 1. Comparison of epileptic types between the two groups of patients

group	sex		Stroke type		Types of epileptic seizures			
	man	woman	hematencephalon	cerebral infarction	Simple partial seizure	complex partial seizures	Tonic-clonic seizures	Typical absence seizures
intervention group	24	15	23	16	13	12	8	6
control group	25	14	22	17	14	11	6	8
χ^2	0.055		0.053		0.652			
P	0.815		0.819		0.884			

2.2. Intervention Methods

Both groups of patients received conventional symptomatic supportive therapy in Western medicine, including hypoglycemia, hypotension, anti-cerebrovascular spasm, anticoagulation, and microcirculation improvement. The control group received routine nursing care and conventional emergency treatment. Both groups were provided with routine basic nursing care in neurology, primarily involving monitoring of vital signs and targeted nursing interventions for specific diseases and adverse reactions.

2.2.1. Control Group

The control group received conventional care, including basic physiological needs and medical care, such as regular repositioning, cleaning, and feeding as part of fundamental physiological care. This involved monitoring drug side effects and patient responses, guiding patients in basic limb function training to help restore their ability to perform daily activities, and providing patients and their families with essential information on epilepsy management and daily care guidance. Upon discharge, necessary self-care instructions were provided to ensure patients could safely continue their rehabilitation process at home.

2.2.2. Test Group

2.2.2.1 Establish a Research Team

A comprehensive nursing intervention team was formed, consisting of 11 members including the department director, deputy director, two head nurses, two physicians, one rehabilitation therapist, one nutritionist, and three nurses with relevant field experience. The primary tasks of the research team included: 1) systematically reviewing literature on post-stroke epilepsy; 2) extracting relevant literature information; 3) collecting expert opinions from relevant fields to guide intervention content. The ward director and head nurse were responsible for team establishment and supervision of plan implementation. The nutritionist assessed patients nutritional status and adjusted nutritional support plans based on specific conditions. Rehabilitation physicians issued corresponding rehabilitation-related medical orders, while rehabilitation therapists supervised and guided patient compliance. Specialized nurses provided personalized care and follow-up management.

2.2.2.2 Intervention Content

(1) Personalized care plan: Based on the results of the baseline survey, conduct a detailed assessment of the patients condition, establish targeted treatment and care objectives, and regularly evaluate the effectiveness of care to adjust the plan in response to changes in the patients status.

(2) Psychological care and support: including psychological counseling, instruction on emotional

management techniques, family support, and group therapy, encouraging family members participation, providing patients with a stable support network, helping to establish positive coping mechanisms, and enhancing their psychological resilience and quality of life.

(3) Cultivation of health education and self-management skills: Conduct group lectures to educate patients and their families on disease, treatment, and care knowledge, enhancing their understanding of the disease and self-management capabilities. This includes proper medication administration, identification and response to epileptic seizures, and daily health monitoring.

(4) Multidisciplinary team collaboration: By integrating physicians, nurses, dietitians, rehabilitation therapists, and psychologists, comprehensive care and support can be ensured for patients from multiple perspectives through teamwork.

(5) Rehabilitation training and improvement of self-care abilities: Develop personalized rehabilitation plans, including physical therapy, occupational therapy, and speech therapy. These training programs aim to enhance patients motor skills, coordination, and balance, as well as their daily self-care abilities, such as dressing, eating, and personal hygiene.

(6) Nutrition and dietary management: Provide personalized nutrition and dietary guidance to meet patients specific health needs. This may include recommendations for low-salt, low-fat diets, as well as supplementation for targeted nutritional deficiencies.

(7) Continuous assessment and nursing plan adjustment: After discharge, dedicated personnel will provide follow-up, including guidance on daily activities, medication use, and reminders for follow-up visits. Progress and patient response will be continuously monitored through WeChat groups or telephone communication, with nursing plans adjusted based on assessment results.

2.3. Evaluation Indicators

2.3.1. Stroke Scale (National Institute of Health Stroke Scale, NIHSS)

The NIHSS scores of patients in both groups were observed before and after intervention, as assessed by the National Institutes of Health. The NIHSS score evaluates language function, consciousness, sensation, visual field, motor function, and facial expression, with a total score of 42 points. Higher scores indicate progressively worse neurological function in patients. [9]

2.3.2. Barthel Index (BI) is a Scale Used to Assess Patients Ability to Perform Activities of Daily Living (ADLs)

including eating, dressing, walking, toileting, and bathing. It consists of 10 items, with a scoring range of 0 to 100 points. A higher score indicates better patients ADL performance. [10]

2.3.3. MAS (Motor Assessment Scale) is a Scoring Tool Used to Evaluate Motor Function in Stroke Patients

It includes eight items: sitting, lying, limb movement, body balance, walking, and fine hand movement, with a scoring range of 0 to 48 points. Higher scores indicate better motor function in the patient. [11]

2.3.4. Effect Evaluation

1) Satisfaction evaluation: The hospitalization duration and patient evaluations of nursing quality were statistically compared between the two groups. Nursing quality evaluations were categorized into three levels: satisfied, fairly satisfied, and dissatisfied. The total satisfaction rate was calculated as (satisfied + fairly satisfied) / total cases. $\times 100\%$.

2) Efficacy Evaluation: According to the "Clinical Disease Diagnosis and Efficacy Judgment Criteria" [12] The evaluation criteria are as follows: Significant efficacy: A marked reduction in the frequency of epileptic seizures, a significant shortening of seizure duration, and a decrease in epileptiform discharges by more than 50%. Effective: A reduction in the frequency of epileptic seizures, a shortening of seizure duration, and a decrease in epileptiform discharges by more than 25%. Ineffective: No reduction in the frequency of epileptic seizures, no shortening of seizure duration, a decrease in epileptiform discharges by less than 25%, or even a worsening of the condition. The total effective rate of treatment is calculated as: (Number of cases with significant efficacy + Number of cases with effective efficacy) / Total number of cases $\times 100\%$.

2.4. Statistical Analysis

(1) Measurement data: For quantitative data, normally distributed variables were described as mean $\pm$ standard deviation ($\bar{x} \pm s$). For comparisons between two independent groups, an independent-samples t-test was employed if the

data were normally distributed with homogeneous variances, whereas Welch's t-test (t' test) was applied when variances were heterogeneous. Non-normally distributed two-sample quantitative data were summarized using median (25th percentile, 75th percentile) [M (P25, P75)] and compared via the Mann-Whitney U rank-sum test. For intragroup comparisons, a paired t-test was performed if the paired differences followed a normal distribution; otherwise, the paired Wilcoxon signed-rank test was utilized.

(2) Categorical data: Statistical descriptions such as frequency, proportion, and percentage are used. For cases where the expected frequency is less than 1 or the total sample size is less than 40, Fishers exact probability method is employed for statistical analysis.

(3) Two individuals entered the data into Excel and cross-checked it. A database was established using SPSS Statistics 25.0 for statistical analysis. The hypothesis testing standard was set at $\alpha=0.05$.

3. Results

3.1. Comparison of NIHSS Scores, ADL Scores, and MAS Scores between the Two Groups Before and After Intervention

Before intervention, there was no statistically significant difference in NIHSS, ADL, and MAS scores between the two groups ($P>0.05$). After intervention, the intervention group showed a statistically significant lower NIHSS score than the control group ($P<0.05$), while both ADL and MAS scores were significantly higher in the intervention group ($P<0.05$). Within each group, post-intervention NIHSS scores were significantly lower than pre-intervention scores ($P<0.05$), and ADL and MAS scores were significantly higher than pre-intervention scores ($P<0.05$). The results are presented in Tables 2, 3, and 4, respectively.

Table 2. Comparison of NIHSS scores before and after intervention between the two groups

group	n	NIHSS grade			
		Before intervention	After the intervention	t	P
control group	39	21.89 $\pm$ 2.68	18.55 $\pm$ 2.45	5.750	<0.05
intervention group	39	22.01 $\pm$ 2.86	19.95 $\pm$ 2.78	3.229	<0.05
t		0.205	2.369		
P		>0.05	<0.05		

Table 3. Comparison of ADL scores between the two groups before and after intervention

group	n	ADL grade			
		Before intervention	After the intervention	t	P
control group	39	48.03 $\pm$ 6.34	52.53 $\pm$ 6.37	3.121	< 0.05
intervention group	39	48.46 $\pm$ 6.06	57.59 $\pm$ 6.28	6.532	< 0.05
t		0.303	3.357		
P		> 0.05	< 0.05		

Table 4. Comparison of MAS scores between the two groups before and after intervention

group	n	MAS grade			
		Before intervention	After the intervention	t	P
control group	39	Before intervention	After the intervention	t	P
intervention group	39	16.41 $\pm$ 4.16	19.08 $\pm$ 4.76	2.633	< 0.05
t		16.64 $\pm$ 4.36	22.54 $\pm$ 4.59	5.822	< 0.05
P		0.239 > 0.05	3.268 < 0.05		

3.2. Comparison of Length of Stay and Satisfaction Rate Between the Two Groups

Compared between the two groups, the intervention group

showed significantly longer hospitalization duration and higher satisfaction rate than the control group, with statistically significant differences ($P < 0.05$). The comparison of hospitalization duration and satisfaction rate between the two groups is presented in Table 5 and Table 6, respectively.

Table 5. Comparison of Length of Hospital Stay Between the Two Groups

group	Number of cases (n)	Hospitalization duration (days)
control group	39	21.92±2.40
intervention group	39	15.79±2.48
<i>t</i>		11.083
<i>P</i>		< 0.05

Table 6. Comparison of satisfaction rates between the two groups [cases (%)]

group	Number of cases (n)	Satisfaction rate (%)	Satisfaction rate (%)	Dissatisfaction rate (%)
control group	39	20(51.28)	7(17.95)	12(30.77)
intervention group	39	26(66.67)	9(23.08)	4(10.25)
χ^2			5.032	
<i>P</i>			0.025	

3.3. Efficacy Comparison

The total effective rate and significant effective rate of the intervention group after treatment were 92.35% and 64.10%, respectively, significantly higher than those of the control

group (74.36% and 51.28%). The difference in total effective rates between the two groups after treatment was statistically significant ($P < 0.05$), indicating that the intervention group demonstrated superior efficacy compared to the control group, as shown in Table 7.

Table 7. Comparison of therapeutic efficacy between the two groups [cases (%)]

group	Number of cases	control	valid	of no avail	Total effective
control group	39	20(51.28%)	9(23.08%)	10(25.64%)	29(74.36%)
intervention group	39	25(64.10%)	11(28.21%)	3(7.69%)	36(92.30%)
χ^2			4.523		
<i>P</i>			0.033		

3.4. Improvement of Epileptic Symptoms in the Two Groups

The intervention group showed fewer epileptic seizures

and shorter seizure duration compared to the control group, with statistically significant differences ($P < 0.05$), indicating superior efficacy of the intervention group over the control group (see Table 8).

Table 8. Comparison of treatment outcomes between the two patient groups

group	Number of cases	Number of epileptic seizures (times/month)		<i>t</i>	<i>P</i>	Duration of attack (min/episode)		<i>t</i>	<i>P</i>
		Before intervention	After the intervention			Before intervention	After the intervention		
intervention group	39	2.70±0.12	0.65±0.07	94.397	< 0.05	4.83±0.31	2.65±0.07	42.361	< 0.05
control group	39	2.66±0.11	1.07±0.06	81.183	< 0.05	4.77±0.14	3.15±0.16	49.177	< 0.05
<i>t price</i>		1.730	30.532			1.050	18.774		
<i>P price</i>		> 0.05	< 0.05			> 0.05	< 0.05		

4. Discussion

The results of this study demonstrate that comprehensive nursing intervention exhibits significant clinical efficacy in elderly patients with post-stroke epilepsy, particularly in terms of neurological function recovery, improvement in activities of daily living (ADL), limb motor function, reduction in hospitalization duration, and enhanced patient

satisfaction. Compared to conventional nursing care, comprehensive nursing intervention can more effectively improve the overall rehabilitation process of patients.

The NIHSS scores of patients in the intervention group were significantly lower than those in the control group post-intervention, indicating that comprehensive nursing care contributes to the recovery of neurological functions in post-stroke epilepsy patients. This may be closely associated with

the meticulous rehabilitation training program implemented during nursing care. The intervention groups nursing care not only included traditional rehabilitation physiotherapy but also incorporated personalized brain function rehabilitation training, assisting patients in gradually restoring motor and language functions through neuromuscular stimulation, limb functional exercises, and other methods. Sun et al.[13]CT-guided intravenous thrombolysis was performed in 99 patients with acute cerebral infarction, who were randomly assigned to either a control group receiving conventional care or an observation group receiving comprehensive nursing intervention. The results demonstrated that the comprehensive nursing intervention significantly improved the total effective rate and total satisfaction with Barthels scale in the observation group, while reducing the NIHSS score. This indicates that comprehensive nursing interventions can mitigate neurological deficits, enhance overall treatment efficacy, increase patient satisfaction with nursing services, and better control disease progression. Therefore, a multidimensional nursing model facilitates faster neurological recovery in stroke patients, thereby reducing the NIHSS score.

The significant improvement in ADL and MAS scores further validated the efficacy of comprehensive nursing interventions in enhancing patients quality of life and limb mobility. Regarding the recovery of daily living abilities, nursing staff designed individualized daily living training programs based on patients specific conditions, including progressive rehabilitation of basic functions such as fine motor hand exercises, dressing, and eating. Wang Aihong et al. [14] A comprehensive nursing intervention was implemented for 200 community-based stroke patients in the rehabilitation phase, who were randomly divided into two groups. The study results demonstrated that, compared to the control group, the comprehensive nursing intervention significantly improved the patients activities of daily living (ADL) and quality of life. The findings indicated that multidisciplinary collaborative comprehensive nursing could markedly enhance patients neurological function and ADL capabilities.[15]By formulating personalized rehabilitation plans, providing physical function training, and offering psychological support, early recovery of stroke patients can be promoted, thereby improving their long-term quality of life.

Patients in the comprehensive nursing intervention group had significantly fewer hospitalization days compared to the control group. This outcome may be attributed to the holistic disease management approach implemented by nursing staff. Through early intervention, personalized rehabilitation plans were provided during hospitalization, followed by continuous post-discharge monitoring via telephone follow-ups and WeChat consultations. Nursing staff promptly identified potential issues during home care and delivered remote guidance to prevent secondary injuries or complications, thereby reducing readmission risks. In the study, discharge instructions for the intervention group not only extended routine care (e.g., medication adherence and follow-up reminders) but also included detailed dietary guidance and lifestyle adjustments to ensure sustained rehabilitation after discharge.

The improvement in nursing satisfaction reflects the significant role of comprehensive nursing in providing psychological and emotional support to patients. During hospitalization, the comprehensive nursing team not only focuses on the patients physiological recovery but also offers

psychological support and emotional guidance, helping patients build confidence in their rehabilitation and avoiding the psychological stress and burden caused by stroke and epileptic seizures. Studies have shown [16–18] The application of comprehensive nursing interventions in patients with cerebral hemorrhage, heart failure, and Parkinsons disease has been shown to enhance satisfaction during hospitalization. The underlying reason may be that patients in the intervention group maintained close communication with nursing staff through multiple channels such as WeChat and telephone, enabling them to receive timely and targeted assistance. This ensures that patients feel adequately supported and cared for even after discharge, thereby improving their satisfaction with nursing services.

The comprehensive nursing group demonstrated superior improvements in both seizure frequency and duration in elderly stroke patients compared to the control group. The analysis revealed that the comprehensive nursing intervention implemented personalized epilepsy management plans based on patients seizure frequency, medical history, and other relevant factors, including medication guidance, seizure prevention, and emergency response. Particularly in terms of medication adherence, nursing staff provided detailed education and communication to patients and their families to ensure timely medication intake, thereby preventing seizures caused by missed or irregular dosing. Additionally, the nursing group enhanced training on early recognition of seizure prodromes and instructed patients and their families on how to manage emergencies, aiming to minimize the frequency and duration of seizures.

This study demonstrates that comprehensive nursing interventions, through personalized care measures, exhibit significant advantages in neurorehabilitation, quality of life improvement, seizure control, and patient satisfaction among elderly patients with post-stroke epilepsy. This multidimensional nursing intervention enables sustained benefits for patients during hospitalization and post-discharge, thereby improving long-term prognosis. Future research should continue to focus on the application of comprehensive nursing interventions in larger sample sizes and conduct long-term follow-ups to evaluate their durable effects and long-term impact on patients quality of life.

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