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Analysis of the Impact of Neurology Nursing on Stroke Rehabilitation Outcomes and Neurological Deficits

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Abstract: *Objective:* To observe the impact of neurology nursing on stroke rehabilitation outcomes and neurological deficits. *Methods:* Sixty-eight stroke patients admitted to our hospital from June 2023 to October 2024 were randomly divided into an observation group receiving neurology nursing (n = 34) and a control group receiving conventional nursing (n = 34). *Results:* Compared with the control group, the observation group had lower NIHSS scores, higher self-care ability scores, lower complication rates, and higher quality of life scores ($p < 0.05$). *Conclusion:* Providing neurology nursing to stroke patients can promote neurological recovery, enhance self-care ability, reduce the incidence of complications, and improve quality of life. It is worth considering.

Keywords: Neurology nursing; Stroke; Rehabilitation outcome; Neurological deficit

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1. Introduction

Stroke is an acute cerebrovascular disease. The onset of stroke is very sudden, has a high disability rate, and is often life-threatening. The disease is mainly caused by the sudden rupture or occlusion of cerebral blood vessels, which prevents blood from flowing into the brain, thereby causing brain tissue damage [1]. The occurrence of diseases is closely related to unhealthy lifestyles, such as smoking and alcohol abuse. At the same time, high blood pressure and diabetes are also important factors leading to the occurrence of diseases. Patients will show various symptoms after the onset, such as numbness of the limbs, weakness, slurred speech, crooked eyes and mouth, etc. Many patients are also accompanied by symptoms such as headache and vomiting, causing obvious discomfort to the patients [2]. Once the disease occurs, the patient will suffer from physical dysfunction, such as aphasia, hemiplegia, etc. In this case, it will further affect the patient's psychological and social functions, etc., and have a greater impact on the patient himself and his family [3]. Therefore, we must pay attention to improving the effect of stroke rehabilitation and promoting the recovery of neurological functions. In this process, we need to strengthen the development of clinical nursing work. This study selected 68 cases of stroke patients in our hospital to observe the effect of neurology nursing implementation.

2. Materials and methods

2.1. General information

68 patients with stroke in our hospital from June 2023 to October 2024 were selected and randomly divided into 2 groups. There were 34 cases in the control group, 22 men and 12 women, aged 56 to 77 (67.38 ± 3.46) years old, 20 cases of cerebral hemorrhage and 14 cases of cerebral infarction. The observation group had 34 cases, 21 men and 13 women, aged 55 to 78 (67.45 ± 3.62) years old, 19 cases of cerebral hemorrhage and 15 cases of cerebral infarction. Comparison of general data, $p > 0.05$.

2.1.1. Inclusion criteria

Patients' vital signs are stable; patients have clear consciousness; have communication skills; and complete medical records.

2.1.2. Exclusion criteria

Mental illness; severe liver and kidney dysfunction; infectious diseases; cognitive impairment.

2.2. Method

2.2.1. Control group

Follow the doctor's instructions to guide patients in taking medications, observe changes in condition, reasonably adjust nursing measures taking into account their recovery status, and advise on precautions, etc.

2.2.2. Observation group

(1) Nursing staff closely observe patients' daily performance, such as facial expressions, behaviors, etc., and carry out in-depth communication to gain a comprehensive understanding of their psychological conditions and take timely psychological intervention measures. You can cite cases with good rehabilitation results to patients, so that they can see that patients with similar conditions have achieved good results through active rehabilitation training, and at the same time explain the condition to them so that they have a clear understanding. Patients are advised to listen to music more and relax their body and mind, which will help relieve their tension and stress. Organize patients to carry out entertainment activities, such as small games, etc., to create a relaxed and pleasant atmosphere. Family members should also be instructed to pay more attention to patients and create a warm family atmosphere.

(2) For patients with language dysfunction, repeated language demonstrations need to be carried out in the early stage of training to allow them to imitate, mainly pronunciation, intonation, etc. You can also use pictures, videos and other methods to communicate with patients, and improve their desire for language expression through visual stimulation. People with severely impaired language function need to start training with single words and phrases, and then gradually train phrases and sentences. After that, the training intensity and difficulty can be continuously increased, such as dialogue exercises, storytelling, etc.

(3) Instruct the patient to carry out limb function training, which requires stretching and rotation training of the elbow, hand and other parts of the affected upper limb. At the same time, the patient should change the position regularly to avoid maintaining one position for a long time, so as to improve the blood circulation of the compressed parts and reduce the risk of complications. The patient's affected limbs should be properly massaged through a variety of methods, such as compression, massage, etc. The massage process needs to be carried out in a certain order. Relevant key parts need to be focused on massage, such as hands, shoulders, ankles, etc. It also needs to be combined with flexion and extension training to further improve joint mobility. During the sitting training process, the patient's head of bed is moderately elevated and maintained at about 30°. According to the gradual extension of the patient's sitting time, the angle of the head of the bed can be reasonably adjusted so that the patient can

better adapt to different sitting postures and improve body stability.

(4) Provide scientific and reasonable dietary advice based on the patient's nutritional status, dietary preferences, etc., so that their existing bad eating habits can be actively corrected, such as high-salt and high-fat diet, excessive drinking, etc. They can eat more protein and vitamin-rich foods to maintain nutritional balance. Patients are advised to always maintain a good lifestyle. If their physical condition allows, they can do walking and other exercises every day to enhance their physical fitness and reduce the risk of disease recurrence.

(5) Patients have a high risk of complications, so the patient's urine needs to be closely observed, such as color, quantity and nature. If the patient has a urinary catheter placed, the condition of the urinary catheter also needs to be checked regularly to ensure that it is in a smooth state. At the same time, the patient's skin and limb conditions were observed. Find out if there are unusual issues. If the patient's hemiplegia is very severe, he or she needs assistance with oral cleaning to remove secretions and food residues in the mouth in a timely manner to ensure smooth breathing.

2.3. Observation indicators

(1) Neurological deficit
Evaluated using the National Institutes of Health Stroke Scale (NIHSS), the lower the score, the better;

(2) Self-care ability
Self-Care Ability Assessment Scale (ESCA), the higher the score, the better;

(3) Statistical complications

(4) Quality of life
Brief Health Scale (SF-36), the higher the score, the better.

2.4. Statistical methods

SPSS26.0 software statistical data, measurement data expressed: ($\bar{x} \pm s$), *t* test, count data expressed: n,%, χ^2 test, $p < 0.05$, the difference is statistically significant.

3. Results

3.1. Comparison of neurological deficits

After intervention, the observation group was lower than the control group, $p < 0.05$, **Table 1**.

Table 1. Comparison of neurological deficits (points)

Group	Before intervention	After intervention
Control group (n = 34)	20.23 ± 2.81	15.82 ± 1.27
Observation group (n = 34)	20.57 ± 2.46	12.28 ± 1.73
t	0.530	9.618
p	0.597	0.000

3.2. Comparison of self-care abilities

After intervention, the observation group was higher than the control group, $p < 0.05$, **Table 2.**

Table 2. Comparison of self-care abilities (points)

Group	Self-responsibility		Self-care skills		Self-concept		Health knowledge level	
	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Control group (n = 34)	16.37 ± 1.57	21.62 ± 1.65	22.62 ± 0.74	26.62 ± 0.67	18.72 ± 1.61	21.27 ± 1.58	30.33± 1.63	34.52 ± 1.61
Observation group (n = 34)	16.94 ± 1.63	25.83 ± 1.54	22.57 ± 0.51	34.74 ± 1.61	18.85 ± 1.62	25.62 ± 0.52	30.72 ± 1.51	44.82 ± 1.60
t	1.469	10.876	0.324	27.151	0.332	15.249	1.023	26.460
p	0.147	0.000	0.747	0.000	0.741	0.000	0.310	0.000

3.3. Comparison of complication rates

The observation group was lower than the control group, $p < 0.05$, **Table 3**.

Table 3. Comparison of complication rates (n%)

Group	Pressure ulcer	Infection	Deep vein thrombosis	Total
Control group (n = 34)	1 (2.94)	2 (5.88)	1 (2.94)	4 (11.76)
Observation group (n = 34)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
χ^2	-	-	-	4.250
p	-	-	-	0.039

3.4. Comparison of quality of life

The observation group was higher than the control group, $p < 0.05$, **Table 4**.

Table 4. Comparison of quality of life (points)

Group	Physiological functions	Emotional function	Mental health	Energy	General health	Social function	Somatic pain	Physiological function
Control group (n = 34)	70.73 ± 2.85	72.71 ± 2.78	72.73 ± 3.45	71.82 ± 2.59	72.24 ± 2.52	71.72 ± 2.93	72.72 ± 2.84	73.36 ± 2.94
Observation group (n = 34)	75.86 ± 3.58	77.95 ± 2.69	76.69 ± 3.61	78.72 ± 2.51	76.49 ± 2.56	77.52 ± 2.71	79.95 ± 2.52	77.72 ± 2.61
t	6.652	7.898	4.624	11.155	6.899	8.474	11.103	6.467
p	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

4. Discussion

Stroke is a type of disease with a very high clinical incidence. It includes two types, namely ischemic stroke and hemorrhagic stroke. The former is mainly caused by the stenosis or obstruction of cerebral blood vessels, which in turn causes ischemia and hypoxia of the brain tissue, eventually leading to necrosis. The latter is mainly caused by the rupture

of cerebral blood vessels, allowing the brain parenchyma or subarachnoid space to enter the blood [4]. There are many risk factors for stroke, which are not only closely related to related underlying diseases, but also closely related to genetic factors, age, etc. [5]. For people, the risk of disease will gradually increase as they age, and the risk of people with a family history of stroke will also further increase. The prognosis of stroke will be affected by many factors, such as whether the treatment is timely, the severity of the condition, and the implementation of rehabilitation care measures. Therefore, timely treatment must be carried out for stroke patients, and at the same time, active nursing measures must be coordinated to improve the patient's prognosis.

Neurology nursing has the characteristics of strong professionalism. It mainly provides nursing services for patients with neurological diseases. It can use various scientific and personalized nursing measures to promote the recovery of patients' neurological functions and improve their quality of life. Under this nursing model, not only the physiological needs of patients are paid attention to, but also the psychological and social functional needs are paid more attention to, and a full range of nursing services are provided [6]. It was applied to the care of stroke patients. During the specific implementation period, a number of comprehensive measures were carried out for patients, such as limb function training, language function training, etc. Limb function training can promote the blood circulation of the patient's limbs through stretching and rotation training of the affected upper limb, regular position changes, massage and sitting training, etc., promote joint mobility and muscle strength, and is conducive to the effective recovery of neurological function. The process of language function training can gradually improve the patient's language expression ability, stimulate the functional recovery of the brain's language center, and reduce the degree of neurological deficit [7]. During the neurology nursing period, we focus on psychological counseling and relevant knowledge explanations for patients. Through in-depth communication with patients, we can further understand the psychological state and take psychological intervention measures in a timely manner. By enumerating rehabilitation cases, it is helpful to effectively improve the patient's confidence in recovery, and to actively participate in the self-care process. At the same time, detailed explanation of disease knowledge can also improve the patient's further understanding of stroke rehabilitation knowledge, and effectively improve their self-management awareness and ability. During the nursing process, various preventive measures are carried out for possible complications, the patient's urine, skin and limb conditions are closely observed, the urinary catheter is checked regularly, and the patient's oral hygiene is done well. Potential complication risks can be discovered and dealt with in a timely manner, and the incidence of complications can be reduced through a series of measures [8]. The nursing measures taken in neurology care are comprehensive and can provide patients with life care guidance, so that they can carry out reasonable diet and exercise activities, which will help patients maintain a healthy lifestyle while their body continues to recover, avoid the influence of related adverse factors, improve their living conditions from multiple aspects such as physical and social functions, and promote the improvement of their quality of life [9].

Therefore, the application of neurology nursing in stroke patients can reduce the degree of neurological deficit, improve self-care ability, reduce the occurrence of complications, and promote the improvement of quality of life, which has promotion value.

Disclosure statement

The authors declare no conflict of interest.

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