Effectiveness of a High-risk Fall Care Program based on the "Safety-support-collaboration" Model in a Neurology Department

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Abstract: *Objective*: To analyze the effect of the high-risk fall care program based on the "safety-support-cooperation" model in neurological profound. *Methods*: 80 patients who were admitted to the Department of Neurology from December 2021 to December 2023 were randomly divided into an observation group and a control group, and were treated with conventional nursing care and conventional + "safety-supportive-cooperative" nursing care program for high-risk falls, respectively. The effects of the two groups were evaluated. *Results*: After the nursing care, the patients' fall prevention self-management ability was stronger, and the scores of each dimension were higher, $P < 0.05$. After the nursing care, the fall risk of the observation group was relatively lower, $P < 0.05$, and the incidence rate of falls in the observation group was lower, $P < 0.05$. *Conclusion*: In the nursing care of neurological patients, based on the "safety-support-cooperation" model, it is possible to establish a high-risk fall nursing care program, which is based on "safety-support-cooperation." *Conclusion*: The establishment of a high-risk fall care program based on the "safety-support-cooperation" model in the care of neurological patients can help improve patients' self-management ability, reduce the incidence of falls, and improve patient safety.

Keywords: Safety-support-collaboration model; High-risk fall care; Neurology; Application

1. Introduction

In neurology, if a patient unintentionally falls on a horizontal surface and unconsciously changes his or her position, it will elevate the degree of disability, increase the patient's sense of pain, increase the patient's psychological burden, and contribute to the increase in the patient's hospitalization time. A large number of studies have shown that in neurology, falls are not impossible to prevent and control, the risk factors involved are relatively more preventable and controllable, and the establishment of a sound fall prevention strategy can help to reduce the incidence of falls. Therefore, attention should be paid to fall prevention care in neurology, combining clinical practice

experience, summarizing and analyzing fall-related risk factors, giving "safety-supportive-cooperative" mode, establishing a targeted and systematic fall care program, improving the frequency of communication between nursing staff and patients, enhancing the level of health education, strengthening patients' physical and mental adaptability, and realizing a better understanding of fall prevention. Strengthening patients' physical and mental adaptability can achieve effective control of falls and other adverse events [1]. The present study analyzes the effectiveness of this high-risk fall care program to help improve care strategies for neurological patients.

2. Information and methodology

2.1. General information

When selecting the research subjects for this study, the researchers started with the patients admitted to the Department of Neurology. Patients whose treatment time was between December 2021 and December 2023 were selected, counting 80 cases, and were randomly divided into the observation group and the control group. In the observation group, there were 27 males and 13 females, with a mean age of 55.36 ± 8.71 years. In the control group, there were 28 men and 12 women, with a mean age of 55.42 ± 8.69 years. Analyzing the data of the two groups shows no significant differences, $P > 0.05$.

Inclusion criteria: Patients who were conscious and admitted to the Department of Neurology were selected. Patients with limb muscle strength higher than grade 4 were selected.

Exclusion criteria: Exclude patients who have lost their ability to take care of themselves and are bedridden. Exclude patients with a history of mental illness or poor nutritional indicators.

2.2. Methodology

2.2.1. Control group control method

Adoption of routine care model. The nursing staff will carry out routine publicity and education, distribute fall prevention health education manuals to patients, and improve the patient's knowledge of fall prevention. Moreover, attention should be paid to the management of the patient's inpatient environment, to remove the potential safety hazards in the patient's surrounding environment.

2.2.2. Control methods for the observation group

Implement a fall prevention care program based on the "Safe-Supportive-Collaborative" model in addition to routine care measures.

First of all, the construction of a falls prevention nursing team should be focused on, which mainly involves nurse leaders and specialist nursing staff, instructing team members to search for relevant literature, summarize and analyze clinical nursing experience, and assess the risk factors of falls through discussion, to provide support for the construction of a targeted nursing program [2]. At the same time, training should be provided to team members to inform them of the knowledge related to "safety-support-cooperation" fall care, to enhance their professionalism, to cultivate their professionalism, to strengthen their safety awareness, and to provide support for fall prevention care.

Secondly, fall prevention care measures are implemented. First, carry out safety management. Nursing staff should pay attention to the setting of the fall list, placing the list in the fall-prone places such as the bedside and the bathroom, and doing a good job of setting high-risk anti-slip warning signs. During this process, nursing staff should actively carry out rounds of observation to assess the time of high risk of falling, such as 00:00–8:00, to confirm whether the patient is at risk of falling [3]. Secondly, a quality control team should be established to ensure

the effective implementation of fall prevention strategies. Thirdly, improve the level of cooperation between medical and nursing staff and patients, increase health promotion and education, and build diversified promotion pathways, such as new media and brochures, and so on, to explain the key points of fall prevention to patients and their families through videos or pictures, and so on, thus improving the ability of patients to save themselves from falls and reduce the level of patient injuries [4].

Finally, the nursing staff needs to communicate with the patient's companion to improve the safety awareness of the companion, the patient's behavior, and other constraints to reduce the incidence of falls.

2.3. Observation of indicators

A self-developed fall prevention self-management behavior questionnaire was developed to assess patients' fall prevention and management skills.

Patients' risk of falling was analyzed by the Morese Falls Assessment Scale. If the patient obtained a score between 0–24, it was low risk. If the patient obtained a score between 25–44, it was a medium risk. If the patient obtained a score higher than 45, it was considered high risk.

Statistically analyzing the status of the patient's fall generation, if the patient did not produce significant injury, it was grade 0. If the patient had a mild injury, it was grade 1. If the patient had a moderate injury, it was grade 2. If the patient had a severe injury, it was grade 3.

2.4. Statistical treatment

SPSS 23.0 was used for data processing, and the count data were tested by x^2 test. Measurement data row t-test. If $P < 0.05$, the difference between the data was significant.

3. Results

3.1. Falls prevention self-management skills

As shown in **Table 1**, after the care, the patients were more capable of self-management of fall prevention, with higher scores on all dimensions, $P < 0.05$.

Table 1. Falls prevention self-management skills before and after care in both groups (Mean ± SD)

Groups	Number of samples	Pre-nursing	Aftercare	*t*	*P*
Environmental management					
Observation group	40	10.48 ± 2.36	17.63 ± 2.34	12.125	0.001
Control group	40	10.51 ± 2.35	14.23 ± 2.48	11.351	0.001
t	-	0.215	9.362	-	-
P	-	0.832	0.002	-	-
Drug management					
Observation group	40	12.26 ± 2.39	21.05 ± 3.21	11.214	0.001
Control group	40	12.28 ± 2.37	15.64 ± 3.25	10.223	0.001
t	-	0.083	9.597	-	-
P	-	0.934	0.001	-	-

Table 1 (Continued)

Groups	Number of samples	Pre-nursing	Aftercare	t	P
Daily behavior management					
Observation group	40	14.32 ± 2.38	26.48 ± 3.51	13.196	0.001
Control group	40	14.35 ± 2.35	20.34 ± 3.21	10.467	0.001
t	-	0.449	9.825	-	-
P	-	0.656	0.001	-	-
Falls self-help behavior management					
Observation group	40	20.35 ± 3.21	34.56 ± 3.69	12.234	0.001
Control group	40	20.41 ± 3.18	28.85 ± 3.37	9.857	0.001
t	-	0.171	8.862	-	-
P	-	0.865	0.004	-	-
Risky behavior management					
Observation group	40	21.01 ± 3.26	34.01 ± 3.64	13.201	0.001
Control group	40	21.04 ± 3.23	27.53 ± 3.41	10.634	0.001
t	-	0.164	9.214	-	-
P	-	0.869	0.003	-	-
Health belief management					
Observation group	40	12.31 ± 2.23	21.36 ± 2.34	9.857	0.001
Control group	40	12.34 ± 2.25	18.62 ± 2.51	8.253	0.010
t	-	0.753	8.125	-	-
P	-	0.367	0.011	-	-
Disease symptom management					
Observation group	40	14.52 ± 2.35	26.05 ± 3.21	14.567	0.001
Control group	40	14.55 ± 2.32	21.49 ± 2.66	9.967	0.001
t	-	0.623	7.234	-	-
P	-	0.578	0.020	-	-

3.2. Risk of falls

As shown in **Table 2**, the observation group had relatively lower nursing risks for aftercare, $P < 0.05$.

Table 2. Risk of falls before and after care in both groups [n (%)]

Groups	Number of samples	Pre-nursing			Aftercare		
		Low risk	Medium risk	High risk	Low risk	Medium risk	High risk
Observation group	40	12 (30.00)	18 (45.00)	10 (25.00)	25 (62.50)	13 (32.50)	2 (5.00)
Control group	40	13 (32.50)	16 (40.00)	11 (27.50)	20 (50.00)	11 (27.50)	9 (22.50)
x^2	-		0.112			10.256	
P	-		0.941			0.001	

3.3. Incidence of falls

As shown in **Table 3**, the incidence of falls was lower in the observation group, P < 0.05.

Table 3. Incidence of falls in the two groups [n (%)]

Groups	Number of samples	Level 0	Level 1	Level 2	Level 3	Total incidence
Observation group	40	1 (2.50)	1 (2.50)	2 (5.00)	0 (0.00)	4 (10.00)
Control group	40	3 (7.50)	4 (10.00)	3 (7.50)	2 (5.00)	12 (30.00)
x^2	-	-	-	-	-	13.234
P	-	-	-	-	-	0.001

4. Discussion

Neurology operation links are affected by the patient's nerve damage and other factors so their limb function may have certain problems, resulting in a relatively high probability of falling, elevating the patient's pain, which may lead to patient disability, increasing the patient's psychological burden, delaying the patient's recovery rate, and increasing the patient's hospitalization time. At the same time, when hospitals review the quality of care, the incidence of falls is one of the main criteria. If routine care is implemented, the degree of attention to fall prevention nursing intervention is not high, as the focus is on the monitoring and maintenance of the patient's vital signs, so the nursing effect is relatively poor, the fall prevention nursing measures formulated are not targeted enough and do not pay attention to the strengthening of the patient's awareness of preventing falls, which reduces the patient's ability in fall self-management [5]. Therefore, nursing staff should pay attention to fall prevention care, analyze the clinical nursing experience in neurology, identify the risk factors for falls, and adjust and optimize the fall prevention care plan by combining the relevant literature, to maintain the safety of patients.

The construction and implementation of a fall care program under the "safety-support-collaboration" model will strengthen the fall prevention awareness of patients and their families, establish a diversified education pathway, improve patients' self-management ability, supplement the training of nursing staff to improve their safety awareness and professionalism, and promote the quality of care, thus reducing patients' risk of falling [6].

The results of this study show that after the nursing care, the observation group has stronger fall prevention self-management ability. The reason for this is that the implementation of fall prevention nursing measures focuses on strengthening the patients' awareness of fall prevention, and through multi-path educational modes, such as new media and publicity brochures, it improves the patients' knowledge of the hazards of falls and the key points of fall prevention, enhances the patients' self-management ability, and promotes the improvement of the patient's self-management level. Relevant studies have shown that, if patients are not provided with health education on fall prevention, their awareness of self-management is not strong, and they do not pay attention to falls, they may overestimate their mobility, or even carry out dangerous activities independently, which will increase the risk of falls [7]. The construction of a "safety-support-collaboration" nursing system will focus on the creation of a safe environment, provide patients with fall prevention nursing services, improve the quality of health education, raise the level of patients' awareness, and strengthen patients' self-protection ability, to achieve the prevention of falls [8].

Through this study, it was found that after the nursing care, the observation group had a relatively low risk of falls and a low incidence of falls. The main reason for this is that the implementation of the observation group's nursing program pays attention to the prevention of falls, establishes a fall prevention nursing team, enhances the safety awareness and professionalism of the team members through training and other means,

provides high-quality nursing care for the patients, and creates a relatively safe environment to reduce the risk of falls. At the same time, the promotion work will be carried out through video and pictures, to improve the patient's self-care ability and self-management awareness, reduce the risk of patient falls, and reduce the degree of physical injury [9]. In addition, nursing staff will pay attention to the communication with the patient's companion, improve the companion's understanding of the hazards of falls, enhance the safety awareness of the companion, appropriately increase the companion time, and support the patient, so that the probability of the patient's fall decreases, and provide assistance for the patient's recovery [10].

In conclusion, consideration should be given to the special characteristics of patients and attention should be paid to fall care in neurology nursing. A sound fall protection program should be established based on "safety-supportive-cooperative" to increase the knowledge of fall care publicity and enhance the patients' self-management ability, reducing the risk of falls and promoting the improvement of patient safety.

Disclosure statement

The authors declare no conflict of interest.

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