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ABOUT COVER

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ORIGINAL ARTICLE

Case Control Study

Effects of the information–knowledge–attitude–practice nursing model combined with predictability intervention on patients with cerebrovascular disease

Hong-Liang Huo, Yuan-Yuan Gui, Chun-Miao Xu, Yan Zhang, Qiang Li

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Abstract

BACKGROUND

Cerebrovascular disease (CVD) poses a serious threat to human health and safety. Thus, developing a reasonable exercise program plays an important role in the long-term recovery and prognosis for patients with CVD. Studies have shown that predictive nursing can improve the quality of care and that the information–knowledge–attitude–practice (IKAP) nursing model has a positive impact on patients who suffered a stroke. Few studies have combined these two nursing models to treat CVD.

AIM

To explore the effect of the IKAP nursing model combined with predictive nursing on the Fugl–Meyer motor function (FMA) score, Barthel index score, and disease knowledge mastery rate in patients with CVD.

METHODS

A total of 140 patients with CVD treated at our hospital between December 2019 and September 2021 were randomly divided into two groups, with 70 patients in each. The control group received routine nursing, while the observation group received the IKAP nursing model combined with predictive nursing. Both groups were observed for self-care ability, motor function, and disease knowledge mastery rate after one month of nursing.

RESULTS

There was no clear difference between the Barthel index and FMA scores of the two groups before nursing ($P > 0.05$); however, their scores increased after

nursing. This increase was more apparent in the observation group, and the difference was statistically significant ($P < 0.05$). The rates of disease knowledge mastery, timely medication, appropriate exercise, and reasonable diet were significantly higher in the observation group than in the control group ($P < 0.05$). The satisfaction rate in the observation group (97.14%) was significantly higher than that in the control group (81.43%; $P < 0.05$).

CONCLUSION

The IKAP nursing model, combined with predictive nursing, is more effective than routine nursing in the care of patients with CVD, and it can significantly improve the Barthel index and FMA scores with better knowledge acquisition, as well as produce high satisfaction in patients. Moreover, they can be widely used in the clinical setting.

Key Words: Information–knowledge–attitude–practice nursing model; Predictive nursing; Cerebrovascular disease; Barthel index; Fugl–Meyer motor function score; Disease knowledge mastery rate

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Core Tip: The information–knowledge–attitude–practice nursing model combined with predictable intervention enhances the nursing effect of cerebrovascular disease cases, significantly improves the Barthel index and Fugl–Meyer motor function scores, and leaves patients highly satisfied and can be widely used in clinical practice.

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INTRODUCTION

Cerebrovascular disease (CVD) is common in clinical settings; its characteristics include acute onset, severe condition, and poor prognosis, which pose a serious threat to human health and safety[1]. In addition to symptomatic treatment, patients with CVD require functional exercises for long-term rehabilitation, which play an important role in long-term recovery and prognosis[2,3]. However, it is difficult for patients to adhere to the process of rehabilitation training, so nursing staff should formulate reasonable plans to improve patients' enthusiasm and compliance with exercise to improve their prognosis[4,5]. Predictive nursing refers to forecasting outcomes before patients have obvious symptoms, anticipating symptoms, and implementing targeted and effective nursing measures. Research has shown that predictive nursing can improve the quality of nursing[6-8]. Recently, the information–knowledge–attitude–practice (IKAP) nursing model has shown a positive effect on stroke patients, which entails the formulation of individualized, humanized, and professional nursing measures according to a patient's unique circumstances[9]. Few studies have investigated the combination of these two nursing modes for CVD. This study explored the effect of the IKAP nursing mode combined with predictive nursing on the Fugl–Meyer motor function (FMA) score, Barthel index score, and disease knowledge mastery rate in patients with CVD, and it described an intervention for clinical nursing.

MATERIALS AND METHODS

General information

A total of 140 patients with CVD treated at our hospital between December 2019 and September 2021 were randomly divided into two groups of 70 individuals each. The observation group comprised 39 men and 31 women. They ranged in age from 43 to 77 years, with an average age of 53.4 ± 4.7 years. Disease types included cerebral hemorrhage (21 cases), cerebral infarction (30 cases), subarachnoid hemorrhage (10 cases), and transient ischemic attack (9 cases). The control group included 33 women and 37 men. They ranged in age from 42 to 75 years, with an average age of 53.9 ± 4.3 years. The disease types included cerebral hemorrhage ($n = 23$), cerebral infarction ($n = 28$), subarachnoid hemorrhage ($n = 14$), and transient ischemic attack ($n = 5$). There was no clear difference between the two groups ($P >$

0.05), indicating comparability.

Inclusion and exclusion criteria

The inclusion criteria were as follows: meeting the CVD diagnostic criteria; the patient was clearly diagnosed with a head computed tomography scan or magnetic resonance imaging; and all patients were included in the first or experienced onset.

The exclusion criteria were as follows: severe liver, heart, kidney, or other organ dysfunction; previous CVD; traumatic brain dysfunction; other brain diseases; and other neurological and mental disorders.

Methods

The control group received routine nursing care, including monitoring vital signs, oxygen inhalation, and other care activities. The observation group received IKAP nursing combined with predictive nursing.

The IKAP nursing model is implemented as follows. To understand the patient's information, design a CVD-related knowledge questionnaire to communicate with patients. Offer individualized psychological guidance to understand the patient's psychological status; provide the corresponding psychological care; alleviate the patient's anxiety, depression, and other negative emotions; provide health education; develop a health education manual; and assist patients in establishing a reasonable diet. Health education is provided to patients and their families through seminars or exchanges, including guidance for those with speech disorders, whereby the type and extent of speech disorders can be assessed. Furthermore, patients are guided through rehabilitation, plural, and stimulation training according to their specific circumstances to maintain maximum communication skills. Patients receive limb function training and early guidance for functional exercises, thereby achieving a better prognosis. Corresponding training is carried out according to the patients' unique circumstances, from passive to active, to help them with autonomous eating, dressing, as well as removing their shoes. Equipment use training was simultaneously provided. Patients are assisted in changing their bad habits, promoting healthy behavior, and improving their self-care abilities.

Predictive nursing was conducted as follows. In terms of dietary nursing, patients with CVD may have swallowing disorders and be prone to choking or coughing due to degeneration of nerve reflex activity. Therefore, diverse paste-like foods should be provided at an early stage. If the patient is bedridden for a long time, intestinal peristalsis can slow down, and digestive function can become reduced; therefore, it is necessary for the patient to chew slowly, eat smaller portions, and consume more meals. To prevent pulmonary infection, one should recognize that patients with longer hospital stays are at an increased risk of pulmonary infection and therefore require intensive nursing. Patients should be encouraged to cough and excrete sputum independently. For those who cannot easily cough sputum, back patting and nebulized inhalation are feasible for excretion. For comatose patients, the respiratory tract should remain unobstructed, and the head should be placed on one side. To actively treat the underlying disease of the lungs, stress ulcers should be examined. Gastric and duodenal ulcers can emerge in patients with CVD. The more severe the condition, the higher the incidence. Therefore, timely measures should be implemented.

First, we determined whether each patient had a history of ulcers or erratic and abdominal distension to rule out stress factors. We then monitored changes in vital signs and observed the patient's state of consciousness. We noted the condition of the stools, checked occult blood regularly, and observed the nature of vomitus.

To prevent a decubitus ulcer, the color of the skin in areas prone to pressure sores should be checked. For pressure sores, the site, size, and depth should be assessed, and a nursing plan should be developed accordingly. The clothes should be changed regularly, the skin should be kept clean and dry, and soft pads should be used to reduce the pressure on the contact surface. In addition, patients should be turned over regularly (their position should be adjusted once every two hours), and the areas of pressure sores should be massaged often. The patients in both groups were nursed for one month.

The Barthel index scores of patients in both groups

The Barthel index was used to evaluate patients' ability to live before and after nursing.

Comparison of motor functions

Motor function was evaluated before and after nursing using the FMA score. The highest score was 100, with lower scores indicating more pronounced motor impairment.

Comparison of compliance behavior between the two groups

The disease knowledge mastery rate, timely medication administration, reasonable diet, and appropriate exercise were compared between the two groups after nursing.

Satisfaction rate

Satisfaction questionnaires were designed to observe satisfaction among patients in both groups; the satisfaction rates were classified as "very satisfied," "satisfied," "average," or "unsatisfactory."

Statistical analysis

Statistical data were analyzed using the SPSS software version 19.0. The count data were represented as a percentage. A chi-square test was used to compare the groups, and measurement data were represented by mean ± SD. Independent samples and paired *t*-tests were used, with $P < 0.05$, indicating that the difference was statistically significant.

RESULTS

Comparison of the living ability of the two groups of patients

The difference between the Barthel index scores of the two groups before nursing was not statistically significant ($P > 0.05$), but that of both groups increased after nursing. The increase was greater in the observation group, and the difference was statistically significant ($P < 0.05$; Table 1).

Comparison of motor function between the two groups of patients

The difference between the FMA scores of the patients in the two groups before nursing was not statistically significant ($P > 0.05$), but increased for both groups after nursing. The increase was greater in the observation group, and the difference was statistically significant ($P < 0.05$; Table 2).

Comparison of compliance behavior between the two groups

The disease knowledge mastery rate, timely medication, appropriate exercise, and reasonable diet were significantly higher in the observation group than in the control group ($P < 0.05$; Table 3).

Comparison of satisfaction between the two groups

The satisfaction rate was 97.14% in the observation group and 81.43% in the control group, which was significantly higher than that in the control group ($P < 0.05$; Table 4).

DISCUSSION

CVD is a common illness that manifests mainly as cerebral hemorrhage and infarction, and stroke is the leading cause of adult deaths[10,11]. CVD has a high morbidity and mortality rate; it often starts suddenly and is serious, leaving patients with sequelae such as speech impairment and hemiplegia, which bring great inconvenience to their lives. Appropriate nursing can effectively improve prognosis and quality of life[12,13]. This study explored the effect of IKAP nursing model combined with predictive nursing on patients with CVD. The IKAP nursing model is a systematic, comprehensive nursing model that requires individualized education with a focus on communication and interactions among nursing staff, families, patients, and society. The model entails adopting appropriate methods to communicate with patients in a targeted manner to improve their knowledge related to CVD, boost their self-management ability, change their mindset, and motivate them to exercise[14,15]. The IKAP nursing model lays the foundation for nursing by collecting information and designing a knowledge questionnaire on CVD so that patients can understand the disease. The results of the full survey and the cognitive ability of the patients were used to develop an educational program on the prevention and treatment of CVD so that the patients could understand the importance of rehabilitation. An individualized psychological nursing plan should be developed, psychological health counseling should be provided, and patients' belief in recovery should be reinforced. Rehabilitation training, including speech and muscle function training, is performed according to the patient's specific situation to facilitate behavioral changes[16,17]. Predictive nursing involves a comprehensive, integrated analysis of a patient during the nursing procedure to anticipate risks in advance so that effective measures can be taken early to avoid or reduce complications. The IKAP model centers on the prevention and control of possible dangers or problems in all aspects of treatment based on the experience of previous work and interventions through individualized assessments to make nursing safer, more effective, and more cooperative with patients. Simultaneously, predictive nursing can help nurses cultivate their thinking and judgment abilities, improve work motivation, and increase work efficiency[18-20]. In this study, there was no statistically significant difference between the FMA and Barthel index scores of the two groups before nursing ($P > 0.05$). The Barthel index and FMA scores in both groups increased after nursing, with the increase being more significant in the observation group. The differences were statistically significant ($P < 0.05$). The rates of disease knowledge mastery, timely medication, appropriate exercise, and reasonable diet were significantly higher in the observation group than in the control

Table 1 Comparison of living ability of the two groups of patients (mean ± SD)

Group	Number of cases	Barthel index			
		Before nursing	After nursing	*t* value	*P* value
Observation group	70	28.44 ± 5.01	68.94 ± 10.52	32.292	0.000
Control group	70	28.26 ± 4.68	45.63 ± 9.63	13.472	0.000
t value		0.227	13.673		
P value		0.821	0.000		

Table 2 Comparison of motor function between the two groups (mean ± SD)

Group	Number of cases	FMA scores			
		Before nursing	After nursing	*t* value	*P* value
Observation group	70	27.33 ± 4.52	56.73 ± 7.47	30.814	0.000
Control group	70	27.29 ± 4.85	40.39 ± 6.84	12.849	0.000
t value		0.054	13.504		
P value		0.957	0.000		

FMA: Fugl–Meyer motor function score.

Table 3 Comparisons of compliance behavior between the two groups, *n* (%)

Group	Number of cases	Disease knowledge acquisition	Timely medication	Appropriate exercise	Reasonable diet
Observation group	70	66 (94.29)	70 (100.00)	64 (91.43)	67 (95.71)
Control group	70	52 (74.29)	56 (80.00)	48 (68.57)	50 (71.43)
χ^2		10.570	15.556	11.429	15.035
P value		0.001	0.000	0.001	0.000

Table 4 Comparison of satisfaction between the two groups of invalids, *n* (%)

Group	Very satisfied	Satisfied	Average	Unsatisfied	Satisfaction rate
Observation group	45 (64.29)	18 (25.71)	5 (7.14)	2 (2.86)	68 (97.14)
Control group	24 (34.29)	23 (32.86)	10 (14.29)	13 (18.57)	57 (81.43)
χ^2					9.035
P value					0.003

group ($P < 0.05$). The satisfaction rate in the observation group (97.14%) was higher than that in the control group (81.43%), and the difference was statistically significant ($P < 0.05$), indicating that the IKAP nursing model combined with predictive nursing was more effective in the care of patients with CVD. It allows nursing staff to fully understand a patient's specific situation, to predict problems in advance, to think of appropriate nursing measures, and to provide timely and appropriate care for problems that have already occurred, thereby significantly improving a patient's ability to live, along with improving their motor function, disease knowledge mastery, timely medication, and satisfaction levels.

CONCLUSION

The IKAP nursing model, combined with predictive nursing, is more effective than routine nursing in the care of patients with CVD; it can significantly improve the Barthel index and FMA scores with better

knowledge acquisition and produce high satisfaction in patients. Moreover, it can be widely used in the clinical setting.

ARTICLE HIGHLIGHTS

Research background

Studies have shown that predictive nursing can improve the quality of care and that the information–knowledge–attitude–practice (IKAP) nursing model has a positive impact on stroke patients. Establishing a reasonable exercise plan plays an important role in long-term rehabilitation and prognosis for patients with cerebrovascular disease (CVD).

Research motivation

There are no reports of predictive nursing combined with the IKAP nursing model for CVD.

Research objectives

This study aimed to explore the effects of IKAP nursing model combined with predictive nursing on the Fugl–Meyer motor function (FMA) score, Barthel index score, and disease knowledge mastery rate in patients with CVD.

Research methods

A total of 140 patients with CVD were randomly divided into control and observation groups. The control group received routine nursing, while the observation group received IKAP combined with predictive nursing. Both groups were observed for self-care ability, motor function, and disease knowledge mastery rate after one month of nursing.

Research results

There was no clear difference between the Barthel index and FMA scores of the two groups before nursing, but their scores increased after nursing. This increase was more apparent in the observation group, and the difference was statistically significant. The rates of disease knowledge mastery, timely medication, appropriate exercise, and reasonable diet were significantly higher in the observation group than in the control group. The satisfaction rate in the observation group was significantly higher than that in the control group.

Research conclusions

The IKAP nursing model, combined with predictive nursing, is more effective than routine nursing in the care of patients with CVD; it can significantly improve the Barthel index and FMA scores with better knowledge acquisition and produce high satisfaction in patients. Moreover, it can be widely used in the clinical setting.

Research perspectives

The IKAP model of care, combined with predictive care, can be widely used in clinical settings to significantly improve long-term care and outcomes in patients with CVD.

FOOTNOTES

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