Application and Evaluation of Continuous Care Model Based on the Omaha System in Stroke Patients after Discharge

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Abstract [**Objectives**] To explore the effect of continuous nursing model based on the Omaha system on stroke patients. [**Methods**] A total of 40 stroke patients in the inpatient department of the Rehabilitation Department of Affiliated Hospital of Jinggangshan University were selected and divided into two groups by the random number table method. Patients in the control group were given routine nursing, and those of the observation group were given continuous nursing based on the Omaha system theory. The score of neurological impairment, daily living ability scale and the quality of life, as well as patients' satisfaction rate before and after treatment were compared between the two groups. [**Results**] The score of neurological impairment, daily living activity ability and the quality of life, as well as patients' nursing satisfaction rate in the observation group were significantly better than those of the control group, with statistical significance ($P < 0.05$). [**Conclusions**] The continuous nursing model based on the Omaha system can significantly improve the neurological function of stroke patients, improve their quality of life and life ability, and promote their rehabilitation.

Key words Omaha system, Continuous nursing, Stroke

1 Introduction

Due to sudden rupture and obstruction of blood vessels in the brain, blood can not flow into the brain to cause brain tissue damage, which is called stroke. Stroke has characteristics of high incidence, mortality, disability rate and recurrence rate. Recent studies have shown that stroke has become a major cause of disease burden in China[1]. Stroke has a high disability rate. After suffering from stroke, about 60% – 80% of the surviving patients have different degrees of dysfunction[2]. Although most of the health problems of patients have been solved during hospitalization, they often missed the best recovery opportunity due to the lack of professional rehabilitation nursing after discharge, which is an important factor leading to their disability[3]. Based on this, it is of great significance to find a continuous and effective nursing intervention for patients after discharge. Omaha system, as a standardized international nursing language system, has been widely used in the continuous care of multiple diseases, and many studies have shown that it has a positive effect on the improvement of patient care outcomes[4-5]. In this study, the continuous care model based on Omaha system theory was applied to stroke patients, and the effect was studied.

2 Data and methods

2.1 General information A total of 40 stroke patients admitted to the inpatient department of the Rehabilitation Department of Affiliated Hospital of Jinggangshan University from March to June in 2020 were selected, including 19 males and 21 females. The patients were divided into the observation group and control group according to the random number table method, with 20 cases in

each group. In the observation group, there were 12 females and 8 males, with an average age of (61.05 ± 5.27) years and an average duration of stroke of (2.12 ± 1.1) months. In the control group, there were 9 females and 11 males, with an average age of (60.11 ± 5.15) years and an average duration of stroke of (2.18 ± 1.0) months. There were no significant differences in gender, age and course of disease between the two groups ($P > 0.05$). This study was approved by the Ethics Committee of the Affiliated Hospital of Jinggangshan University, and all patients and their families signed informed consent. Diagnostic criteria: the diagnostic criteria of this study referred to the 8th edition of *Internal Medicine*[6]. Inclusion criteria: (i) stroke was confirmed by CT or MRI; (ii) the course of the disease was within 2 weeks to half a year, and the patients were discharged in stable condition; (iii) the patients were conscious and had no serious cognitive impairment, and their score of mini-mental status examination (MMSE) was ⩾24; (iv) The patients or their family members signed informed consent. Exclusion criteria: (i) stroke was caused by intracranial macroangiopathy, cardiac embolism, and arteriosclerosis; (ii) stroke was caused by intracranial tumor and brain trauma; (iii) stroke was accompanied by serious heart, liver, kidney and other functional abnormalities; (iv) stroke patients had mental abnormalities or cognitive dysfunction, and were unable to communicate.

2.2 Treatment method Both groups of patients were given medical treatment and rehabilitation training during hospitalization. Medical treatment: medication was conducted according to the secondary prevention and treatment plan of stroke in the *Chinese Guidelines for the Prevention and Treatment of Cerebrovascular Diseases* (2010 edition)[7]. Rehabilitation training includes physical therapy, occupational therapy, language and cognitive function training. Patients in the control group were given routine nursing, including health education, diet nursing, exercise nursing, *etc*. Patients in the observation group were given continuous

care based on the Omaha system besides routine nursing[8-9]. During hospitalization, the Omaha system intervention specialized nursing team was established, and was composed of treating doctors, rehabilitators and responsible nurses. The contents are as follows. (i) In terms of question guidance and consultation, hospitalized patients were given health education, should know relevant knowledge of their condition, were cared and encouraged to improve their confidence to cure the disease, relieve their worry and anxiety, reduce their psychological burden, enhance their sense of trust, and establish a good doctor-patient relationship. In addition, personal information files of the patients were established, and personalized rehabilitation nursing methods were developed. The patients were assisted to develop self-care plans, and their consultation needs were met. Meanwhile, the patients were guided to carry out self-daily nursing operations and prevent complications. (ii) Guided by the Omaha intervention measures, in the nursing process, the nursing staff combined with their own professional knowledge to evaluate the patient's physiological field, psychological activity, health behavior and other fields, guide the patients to take the correct medication, make them know the causes, treatment methods and prognosis of the disease, and inform them the importance of preventing complications to enhance doctor-patient cooperation. Through the intervention and follow-up of the patients, they should understand the patients' needs and nursing problems, formulate effective improvement countermeasures in time, improve the patients' cognition of home rehabilitation and functional exercise, make them master rehabilitation functional exercise methods, and provide them with rehabilitation training guidance through outpatient consultation and wechat platform according to the patients' specific conditions, so as to improve their nursing behavior, improve the effectiveness of rehabilitation training, make them restore self-care ability in self-exercise, enhance their self-confidence and self-satisfaction. (iii) In respects of case management, the nursing problems of the patients were tracked, and they were given differentiated and personalized guidance. Medical workers communicated with patients carefully to improve their cognition, enhance their participation, create a good medical environment, encourage them to participate in social activities, and guide them to carry out moderate rehabilitation exercises. (v) In terms of supervision and evaluation, based on the Omaha problem classification system, the patients' condition was checked at the time of discharge, and the continuous nursing intensification period was within 30 d after discharge, during which professional nursing guidance was carried out, including medication, rehabilitation training, nursing guidance, etc. The nursing team conducted periodic supervision and evaluation of the patients' health problems every 2 weeks to ensure the effective implementation of various nursing measures, and carried out continuous quality improvement according to the results. Patients in both groups received continuous care for 3 months.

2.3   Observation indexes and evaluation of curative effect   The recovery effect of patients in each group was compared after 3 months. (i) Score of neurological function deficit: NIHSS scale was used to score their neurological function according to the patients' consciousness level, command cooperation, eye movement, visual field deficit, facial expression paralysis, limb movement disorder, ataxia, language expression, etc. The score ranged from 0 to 42. The lower the score, the better the recovery of neural function[10]. (ii) The score of activity of daily living (ADL) scale was used to assess the patients' self-care ability. The higher the score, the better the patients' self-care ability. (iii) The quality of life of the patients before and after the treatment was assessed by the Abbreviated Health Status Survey Scale (SF-36). The higher the score, the better the quality of life. (iv) The nursing satisfaction rate of patients in the two groups was compared.

2.4   Statistical method   SPSS 24.0 statistical software was used to analyze the data. The measurement data were expressed as mean ± standard deviation ($\overline{X} \pm S$), and t test was used. The statistical data was expressed as rate, and χ^2 test was adopted. $P < 0.05$ meant that the difference was statistically significant.

3   Results and analysis

3.1   Comparison of patients' NIHSS score between the two groups before and after the treatment   Before the treatment, there was no significant difference in the NIHSS score between the two groups ($P > 0.05$). After the treatment, the NIHSS score of patients in the observation group was lower than that of the control group ($P < 0.05$), and the difference was statistically significant (Table 1).

Table 1   NIHSS score of patients in the two groups before and after treatment ($n = 20$)

Group	Before the treatment	After the treatment
Observation	15.74 ± 2.72△	9.27 ± 1.52▲
Control	15.36 ± 2.68	12.03 ± 2.14

Note: △ means $P > 0.05$, and ▲ means $P < 0.05$.

3.2   Comparison of patients' ADL score between the two groups before and after the treatment   Seen from Table 2, there was no significant difference in the ADL score between the two groups before the treatment ($P > 0.05$), and the score of the observation group was significantly higher than that of the control group after the treatment ($P < 0.05$).

Table 2   ADL score of patients in the two groups before and after the treatment ($n = 20$)

Group	Before the treatment	After the treatment
Observation	51.06 ± 5.26	60.57 ± 6.03
Control	52.12 ± 5.21△	68.22 ± 6.12▲

Note: △ means $P > 0.05$, and ▲ means $P < 0.05$.

3.3   Results of health status survey scale   There was no difference in the health status survey scale (SF-36) score between the two groups before the treatment ($P > 0.05$). Compared with the control group, the SF-36 score of patients in the observation group significantly increased ($P < 0.05$) after the treatment (Table 3).

Table 3 SF-36 score of patients in the two groups before and after the treatment ($n = 20$)

Group	Before the treatment	After the treatment
Observation	$60.52 \pm 7.16^{\triangle}$	$84.06 \pm 8.81^{\blacktriangle}$
Control	61.15 ± 7.02	72.14 ± 8.02

Note: $^{\triangle}$ means $P > 0.05$, and $^{\blacktriangle}$ means $P < 0.05$.

3.4 Comparison of patients' nursing satisfaction rate between the two groups As shown in Table 4, the nursing satisfaction rate of patients in the observation group was significantly higher than that of the control group ($P < 0.05$).

Table 4 Nursing satisfaction rate of patients in the two groups (%, $n = 20$)

Group	Very satisfied	Satisfied	Dissatisfied	Overall satisfaction rate
Observation	9	9	2	90
Control	4	12	4	80

4 Discussion

Stroke is characterized by high disability rate, complicated condition and long rehabilitation training period. Traditional hospital-centered treatment and nursing can not meet all the needs of patients, and medical staff and caregivers pay too much attention to the effects of drug on rehabilitation, but there is a lack of effective assessment and intervention on the environmental, psychosocial and health promotion problems faced by patients. Although routine nursing can meet the needs of patients, this nursing model focuses on disease remission and complication prevention, is difficult to meet the diversified needs of patients, and cannot meet the needs of clinical nursing[11]. Omaha system, as a set of standardized nursing language and classification system, not only provides patients with perfect nursing care, but also can make quantitative evaluation of nursing outcomes, which is conducive to the management of patients' health records. Moreover, it is simple, comprehensive and compatible with computers, and can better make up for the shortcomings in the management of stroke patients[12]. The treatment outcome of patients was significantly improved. From this experiment, it was found that the satisfaction rate of patients in the observation group to the Omaha system nursing mode was significantly higher than that in the control group ($P < 0.05$), indicating that this mode can better improve their condition, and patients had further diversified needs compared with conventional nursing operations.

Continuous rehabilitation training for stroke patients is particularly important, and its curative effect directly affects the recovery of the patient's condition. After discharge from hospital, most stroke patients are often forced to suspend rehabilitation training due to lack of professional rehabilitation and nursing knowledge, which is an important factor leading to the aggravation of patients' relapse. Traditionally, care activities for patients are limited to the period of hospitalization, and care services are terminated after discharge. Although most of the health problems of patients have been solved during hospitalization, many patients still have high health care needs after discharge, so it is necessary to carry out continuous and effective nursing intervention for patients after discharge. The Omaha system is currently recognized as a nursing system with good results, and has been widely used in clinical and community continuity care[13]. The continuing care model based on the Omaha system, which is a personalized, comprehensive and integrated intervention measure for stroke patients, is of great significance in promoting rehabilitation, and is an important method to maintain and supervise the rehabilitation effect of patients. The continuing care model is designed through a series of actions to ensure that patients receive different levels of care with collaboration and continuity in different health care settings (such as hospital and home) and the same health care setting (such as different departments of a hospital), usually referring to the continuation from hospital to home. This includes discharge planning through the hospital, referrals, ongoing follow-up and guidance after the patient returns to the family or community. The Omaha system provides a continuous and comprehensive assessment guide for the management of stroke patients, enabling medical staff to identify and address previously overlooked problems in patients. The combination of continuous care with the Omaha system can give full play to their advantages, further strengthen the rehabilitation effect, and allow patients at home to obtain high-quality nursing services. During this experiment, patients in the two groups were still provided with routine medication and rehabilitation training guidance after discharge, but a personalized continuous care plan was developed according to the differences in the condition of patients in the observation group. From the follow-up visit after 3 months, it was found that the score of neurological impairment, daily living activity ability and the quality of life, as well as nursing satisfaction rate of patients in the observation group were significantly better than those of the control group, with statistical significance ($P < 0.05$). It indicates that the continuous nursing model based on the Omaha system can alleviate the neurological impairment of patients, improve their quality of life and life ability, and promote their rehabilitation. It is proved that the continuous nursing model based on the Omaha system had a significant improvement effect on stroke patients. Wong *et al.*[14] adopted the Omaha system-guided evaluation-intervention-evaluation program intervention, and found that there was a reduction in patient readmission rate and significant improvement in their quality of life, self-efficacy, and satisfaction. Karen A[15] used the Omaha system to perform K-B-S scores on patients' cognition, behavior and condition, and used ADL quality of life, daily activity ability, health service utilization times, patients' satisfaction and other indicators for the evaluation. It reflected the improvement of stroke patients' condition in more detail, improved patients' treatment compliance, and reduced the rate of patients returning to the hospital, which was consistent with the results of this experiment. The improvement effect of Omaha system's continuous care model on stroke patients was verified.

In summary, the adoption of the Omaha system-based continuous care model can significantly improve the neurological function of stroke patients, improve their quality of life and life ability, and better promote their rehabilitation.

pharmacology. It is composed of four traditional Chinese medicines: *A. manihot* flower, Huobahuagen, *A. membranaceus*, and *C. officinalis*. It has the effects of nourishing qi and yin, clearing and promoting blood circulation and unblocking collaterals. The results of our study found that it had significant clinical efficacy in reducing proteinuria, protecting renal function, and reversing DKD when using the Kunkui Kidney Preserving Paste to treat DKD patients with the syndrome of damp heat and blood stasis in clinical proteinuria stage, and there are no significant adverse reactions. Among them, *A. manihot* flower is the monarch drug in this prescription, with the main efficacy of clearing heat, promoting dampness and blood circulation, and unblocking collaterals. Related evidence-based medical research has confirmed that *A. manihot* flower preparation significantly reduced proteinuria than RASI[7], and has been widely used in clinical practice for the treatment of DKD. Huobahuagen is the root of *Tripterygium hypoglaucum* (Levl.) Hutch, a plant similar to *T. wilfordii* Hook F. It has the effects of clearing heat, detoxifying, dehumidifying, and activating collaterals. Modern pharmacological research has confirmed that Huobahuagen has various effects such as improving microcirculation and anti-glomerulosclerosis, which are beneficial for reducing proteinuria and protecting kidney function, and can play a multi-target role in preventing and treating DKD[8]. The combination of *A. membranaceus* and *C. officinalis* is used to tonify qi and yin. The four herbs treat both manifestation and root cause of DKD, and have excellent clinical effects by clearing heat and dampness, promoting blood circulation, and nourishing qi and yin.

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