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The Application Effect of the Discharge Preparation Plan Based on the ADOPT Nursing Model in Patients with First-Visit Ischemic Stroke

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Abstract: *Objective:* To investigate the application effect of the discharge preparation plan based on the ADOPT nursing model in patients with first-visit ischemic stroke. *Methods:* Eighty patients with first-visit ischemic stroke admitted to our hospital from June 1, 2024 to November 31, 2024 were selected and divided into a control group (June 1, 2024 to August 30, 2024) and an intervention group (September 1, 2024 to November 31, 2024) according to different admission times, with 40 cases in each group. The control group received routine care and discharge guidance, while the intervention group received a discharge preparation plan based on the ADOPT model on the basis of routine care. The discharge readiness [Discharge Readiness Scale (RHDS)] of patients on the day of discharge was compared. Self-efficacy at 3 months after discharge [evaluated using the Chronic Disease Self-Efficacy Scale (SECD6)], activities of daily living [evaluated using the Barthel index (BI)], blood glucose and blood pressure indicators (diastolic blood pressure, systolic blood pressure, FPG, 2 h PG), and readmission rate within 3 months after discharge were also compared between the two groups. *Results:* On the day of discharge, the RHDS-related dimension scores of the intervention group were higher than those of the control group ($t = 17.993, 8.560, 10.243$, $p < 0.05$); Three months after discharge, the SECD6 score and BI score of the intervention group were higher than those of the control group ($t = 8.910, 10.899$, both $p < 0.05$); Systolic blood pressure, diastolic blood pressure, FPG and 2h PG in the intervention group were lower than those in the control group ($t = 8.868, 4.794, 3.829, 7.121$, all $p < 0.05$); Within 3 months after discharge, the readmission rate of the intervention group was lower than that of the control group ($\chi 2 = 5.165{,}2$ $p < 0.05$). *Conclusion:* The discharge preparation plan based on the ADOPT nursing model, when applied to patients with first-visit ischemic stroke, can not only enhance self-efficacy and discharge preparation, improve activities of daily living, but also optimize blood glucose and blood pressure indicators and reduce the readmission rate, which is worthy of reference.

Keywords: ADOPT nursing; Discharge preparation plan; First visit to ischemic stroke; Readiness for discharge; Readmission rate

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1. Introduction

Ischemic stroke is a neurological deficit syndrome caused by obstruction or narrowing of cerebral arteries, which leads to impaired blood circulation in the brain, resulting in ischemia and hypoxia and softening or necrosis of brain tissue [1]. With the deepening reform of China's medical system, medical institutions often shorten the length of hospital stay and increase the bed turnover rate, causing most patients to return home after their conditions stabilize [2]. Some strokes, after treatment, are often accompanied by varying degrees of functional impairment, and there are still many unmet rehabilitation needs at the time of discharge. To ensure a better return of patients to their families and society, it is important to develop targeted discharge plans to improve discharge readiness. Therefore, it is necessary to explore a new model of care to meet the needs of patients for discharge preparation. Conventional discharge guidance and discharge planning lack multidisciplinary intervention, and the intervention effect is constrained by time and space factors, resulting in unsatisfactory intervention effects. The ADOPT nursing model is an intervention model consisting of five steps: attitude, definition, open thinking, planning, and implementation, aiming to solve the problem [3]. At present, some scholars have applied the ADOPT nursing model to diabetic patients, and the results show that the ADOPT model is satisfactory in improving self-management behavior, quality of life and more [4]. The discharge preparation plan is a new type of nursing model that has emerged in recent years. It refers to the plans made by hospitals to help patients and their families with treatment and care after discharge, so that patients receive continuous care after discharge, which is a form of continuous care [5]. Previous reports have found that nurse-led discharge planning care applied to stroke patients' discharge preparation can improve discharge readiness and keep the risk of readmission at a low level, which is worthy of clinical reference [6]. There are very limited domestic research reports on the application of the ADOPT model to the discharge preparation planning of stroke patients, and its application effect needs further study. In view of this, this study is conducted with the aim of providing a reference basis for the future. The relevant reports are as follows.

2. Data and methods

2.1. General information

Eighty patients with first-diagnosed ischemic stroke admitted to the neurology Department of our hospital from June 1, 2024 to November 31, 2024 were selected and divided into a control group (June 1, 2024 to August 30, 2024) and an intervention group (September 1, 2024 to November 31, 2024) according to different admission times, with 40 cases in each group.

(1) Control group

22 males, 18 females; Age: 45–77 years, average (60.73 ± 5.38) years

(2) Educational attainment

17 cases in junior high school and below, 23 cases in senior high school and above

(3) Intervention group

23 males, 17 females; Age ranged from 46 to 78 years, with an average of (61.24 ± 5.53) years

(4) Educational attainment

19 cases were junior high school or below, and 21 cases were senior high school or above. There was no statistical significance between the two groups of data ($p > 0.05$). This study was reviewed by the hospital ethics committee before it was conducted.

2.1.1. Inclusion criteria

(1) Diagnosed with ischemic stroke [7]
(2) First diagnosis and admission
(3) The condition is stable after active treatment
(4) Normal cognitive and communication abilities
(5) Informed consent has been signed

2.1.2. Exclusion criteria

(1) Comorbidity of vital organ function
(2) In the middle or advanced stage of a malignant tumor
(3) Large cerebral infarction or other serious complications
(4) Previous history of mental illness
(5) Not returning home after discharge and being transferred to another institution
(6) Not cooperating with the follow-up or dropping out halfway

2.2. Methods

Both groups were treated with uniform and standardized medication both inside and outside the hospital. Patients in the control group received routine care in the neurology ward and routine discharge guidance as follows:

(1) Admission and health education
Responsible nurses introduced the ward environment, hospital management system, etc. to patients; By sending Wechat videos or distributing health education brochures, patients were informed of the disease pathogenesis, risk factors, treatment plans and complications, and were given medication care, dietary guidance and staged rehabilitation training.

(2) Patient monitoring
Regularly monitor the patient's vital signs and inform the doctor of any abnormalities.

(3) Neurological assessment
Regularly assess the patient's neurological condition, such as consciousness, language, motor function, etc. If there are any abnormalities, promptly advise the attending physician to dynamically adjust the medication plan

(4) Postural care
Inform the patient that they can lie still for a long time to prevent pressure injury or muscle atrophy, and regularly turn the patient over, pat their back, change their position, etc.

(5) Discharge guidance
Before discharge, the responsible nurse conducts a comprehensive assessment of the patient's physical condition and provides discharge guidance to the patient and their family, including post-discharge medication, diet, rehabilitation training and life guidance. At the same time, prepare discharge materials and items for the patient, instruct the patient to come to the hospital for regular check-ups, add the patient's family or the patient's Wechat, and conduct regular follow-ups through phone calls or Wechat voice messages once a week. The follow-ups mainly ask the patient whether they follow the doctor's instructions for medication and rehabilitation training outside the hospital, and provide technical guidance to patients who do not perform well in the above situations outside the hospital when necessary.

The intervention group implemented a discharge preparation plan based on the ADOPT model on the basis of routine care. The steps were as follows: Form an ADOPT team consisting of one attending physician, one head nurse, one nutritionist, one psychological counselor, one rehabilitation therapist, and five specialist nurses in the department. The head nurse trained the group members on the definition of the ADOPT model, its development at home and abroad, the process, and stroke rehabilitation care, etc. After the patient's condition is stable, the team members comprehensively assess the patient's physical condition, develop personalized care plans, and implement the discharge preparation plan under the ADOPT model.

As follows:

(1) Attitude (A)

Specialist nurses have face-to-face conversations with patients, assess their attitudes towards the disease, care and rehabilitation training, build a good trust relationship through open-ended questions, encourage patients to speak out actively, provide targeted guidance based on patient feedback, emphasize the importance of care and rehabilitation training, and invite previous successful rehabilitation cases to share their experiences and insights; Establish wechat groups for patients, push electronic illustrated handbooks or videos related to disease knowledge, and invite group members such as attending physicians, nutritionists, psychological counselors, and rehabilitation therapists to answer questions in the groups in a timely and targeted manner based on their own research fields. For example, psychological counselors encourage family members to give more companionship and care to patients, create a good atmosphere, provide psychological counseling to patients, and relieve patients' negative emotions. To reduce psychological burden, help patients build confidence in recovery and motivate them, nutritionists should assess the nutritional risk of patients and provide them with scientific dietary guidance.

(2) Definition (D)

The rehabilitation therapist helps the patient identify the problems and obstacles they are facing in the current rehabilitation process, ask questions, and determine the problems that the patient urgently wants to understand or solve. Understand the patient's mental state, living habits, etc. Guide the patient to correct wrong perceptions and ideas, encourage the patient to cooperate actively and improve compliance.

(3) Open mind (O)

Specialist nurses encourage patients to have an open mind, express their inner thoughts, find solutions based on defined problems and obstacles, and set phased goals.

(4) Plan (P)

Based on the problem and goal, the group members, under the coordination of the head nurse, work together with the patient to develop the corresponding plan. During the development process, the patient is at the center, and the patient's sense of participation is increased. Encourage family members to offer support while group members provide advice and assistance from a professional perspective.

(5) Implementation (try it out, T)

Group members regularly evaluate the patient's care and rehabilitation training and provide timely feedback. To achieve rehabilitation goals, encourage the patient, for unachieved rehabilitation goals, analyze the reasons together with the patient, find solutions, and make appropriate adjustments to the care or rehabilitation plan, such as helping the patient create a beneficial home environment. Provide rehabilitation knowledge and skills training to family members and encourage them to urge patients to follow the plan and cooperate with rehabilitation treatment. For patients with poor compliance, family

members should supervise to improve the implementation rate of the plan.

The intervention lasted for 3 months for both groups of patients.

2.3. Observation indicators

(1) Readiness for Discharge On the day of discharge, the Readiness for Discharge Scale (RHDS) was used for assessment [8]. The scale, translated into Chinese by Lin et al., consists of three aspects: personal status, adaptability, and anticipatory support, involving 3, 5, and 4 items respectively, with a full score of 120. The scores obtained were positively correlated with readiness for discharge.

(2) Self-efficacy was evaluated on the day of discharge and 3 months after discharge using the Chronic Disease Self-Efficacy Scale (SECD6) [9]. The scale covers two dimensions, symptom management and disease commonality management, and consists of six items, each on a 1–10 scale, with a maximum score of 60. The score was positively correlated with self-efficacy.

(3) Activities of daily living were assessed using the Barthel Index (BI) on the day of discharge and 3 months after discharge [10]. The scale involves 10 items such as walking on flat ground and dressing, with a maximum score of 100. The higher the score, the higher the ability to live.

(4) Blood glucose and blood pressure indicators Systolic and diastolic blood pressure were measured on the day of discharge and 3 months after discharge. Fasting plasma glucose (FPG) and 2-hour postprandial plasma glucose (2 h PG) indicators were also measured in both groups. Blood pressure indicators were measured three times consecutively, and blood glucose indicators were measured three times consecutively. The results were taken as the average of the three measurements.

(5) Readmission rate by querying the electronic medical record system within 3 months after discharge, the unplanned readmission of the two groups of patients was counted.

2.4. Statistical methods

Statistical analysis was performed using SPSS 28.0 software. Measurement data were described using mean + standard deviation ($\bar{x} \pm s$) and *t-test*; Count data were described using [number of cases (percentage)] and chi-square test; A difference was indicated as $p < 0.05$.

3. Results

3.1. Discharge preparation

On the day of discharge, the RDS-related dimension scores of the intervention group were higher than those of the control group ($p < 0.05$), as shown in **Table 1**.

Table 1. Comparison of RHDS-related dimension scores between the two groups ($\bar{x} \pm s$, points)

Group	n	Personal status	Adaptability	Anticipatory support
Control group	40	18.23 ± 1.41	30.76 ± 2.53	27.35 ± 2.37
Intervention group	40	24.34 ± 1.62	35.68 ± 2.61	33.58 ± 3.03
t		17.993	8.560	10.243
p		< 0.001	< 0.001	< 0.001

3.2. Self-efficacy

Three months after discharge, the SECD6 score of the intervention group was higher than that of the control group ($p < 0.05$). See **Table 2**.

Table 2. Comparison of SECD6 scores and BI scores between the two groups ($\bar{x} \pm s$, points)

Group	n	SECD6 score		BI score	
		On the day of discharge	Three months after discharge	Day of discharge	Three months after discharge
Control group	40	26.37 ± 2.78*	31.46 ± 3.13	61.25 ± 3.27*	75.68 ± 3.64
Intervention group	40	25.84 ± 2.71*	37.95 ± 3.38	60.86 ± 3.12*	84.37 ± 3.49
t		0.863	8.910	0.546	10.899
p		0.391	< 0.001	0.587	< 0.001

Note: *$p < 0.05$ compared with the day of discharge in this group

3.3. Activities of daily living

Three months after discharge, the BI score of the intervention group was higher than that of the control group ($p < 0.05$). See **Table 2**.

3.4. Blood glucose and blood pressure indicators

Three months after discharge, systolic blood pressure, diastolic blood pressure, FPG, and 2h PG in the intervention group were lower than those in the control group ($p < 0.05$). See **Table 3** and **4**.

Table 3. Comparison of systolic and diastolic blood pressure between the two groups ($\bar{x} \pm s$)

Group	n	Diastolic blood pressure (mmHg		Systolic blood pressure (mmHg)	
		Day of discharge	Three months after discharge	Day of discharge	Three months after discharge
Control group	40	98.38 ± 3.83*	92.43 ± 3.67	147.64 ± 5.89*	136.75 ± 5.82
Intervention group	40	98.72 ± 3.79*	85.28 ± 3.54	146.87 ± 5.92*	130.57 ± 5.71
t		0.399	8.868	0.583	4.794
p		0.691	< 0.001	0.561	< 0.001

Table 4. Comparison of FPG and 2h PG between the two groups ($\bar{x} \pm s$)

Groups	n	FPG (mmol/L)		2h PG (mmol/L)	
		Day of discharge	Three months after discharge	Day of discharge	Three months after discharge
Control group	40	8.26 ± 1.11*	7.45 ± 1.06	11.85 ± 1.23*	10.34 ± 1.14
Intervention group	40	8.18 ± 1.17*	6.58 ± 0.97	11.96 ± 1.27*	8.46 ± 1.22
t		0.314	3.829	0.393	7.121
p		0.755	< 0.001	0.695	< 0.001

3.5. Readmission rate

During the treatment period, the readmission rate of the control group was 22.50% (9/40). The readmission rate in the intervention group was 5.00% (2/40). The readmission rate of the intervention group at 5.00% was lower than that of the control group at 22.50% ($\chi^2 = 5.165$; $p < 0.05$).

4. Discussion and conclusion

Stroke is one of the neurological emergencies, with ischemic stroke being the most common in clinical practice, accounting for 60% to 80% of stroke patients [11]. Due to the high incidence of ischemic stroke, as well as the high rates of disability and mortality, it has a significant impact on the physical health and life safety of patients [12]. With the continuous development of medical technology, the vast majority of patients can effectively improve their chances of survival, control their condition and meet the discharge criteria after active treatment. However, some patients may still have some health problems and face different degrees of physical dysfunction. In addition, there are many risk factors for stroke patients, and the recurrence risk is relatively high. It is necessary to provide continuous care for patients after they are discharged. It is particularly important to introduce a discharge gown plan.

The ADOPT nursing model, which aims primarily at solving problems and advocates stimulating subjective initiative and encouraging patients to actively participate in self-management, has been applied to the care of various chronic diseases [13,14]. The results of this study showed that on the day of discharge, the scores of the RHDS-related dimensions in the intervention group were higher than those in the control group; Three months after discharge, the SECD6 score of the intervention group was higher than that of the control group ($p < 0.05$), suggesting that the discharge preparation plan under this model can improve the discharge readiness of stroke patients and enhance their self-efficacy. The reasons for the analysis were: Based on the ADOPT nursing model, with multidisciplinary participation, group members performing their respective duties and cooperating with each other, and integrating medical resources, it can provide patients with sufficient anticipatory support, enable patients to adapt to the role transition, facilitate the active participation of patients, better master rehabilitative knowledge, and voluntarily participate in rehabilitation, thereby improving self-efficacy and discharge preparation; At the same time, patients' active participation in planning can enhance their awareness of the disease, and in combination with multidisciplinary collaboration to address existing problems specifically, it is beneficial to improve self-care ability and help patients prepare for discharge; In addition, establishing a good nurse-patient relationship, through various means such as patient communication groups and psychological counseling intervention, can reduce the psychological burden of patients, relieve their emotions, help establish a correct concept of the disease, face the disease positively, and help improve cooperation ability and self-efficacy. The results of this study show that three months after discharge, the levels of related blood glucose and blood pressure indicators in the intervention group were lower than those in the control group, but the BI score was higher than that in the control group ($p < 0.05$), indicating that the discharge preparation plan under this nursing model can enhance the daily living activities of patients and effectively control the blood pressure and blood glucose levels of patients. The reason for this is that most stroke patients are discharged with hemiplegia, aphasia, swallowing and other functional disorders, which affect their ability to perform daily activities [15].

The ADOPT care model, by setting care goals and plans, can enhance patients' awareness of the disease, help them realize the potential risks of the disease, and deeply understand the importance of blood sugar control,

diet and exercise for prognosis, encourage patients to actively think about the significance of self-management, consciously follow medical advice and implement plans, thereby facilitating the improvement of daily activities, Effective control of blood pressure and blood sugar levels. The results of this study finally showed that within 3 months after discharge, the readmission rate of the intervention group was lower than that of the control group ($p < 0.05$), indicating that the discharge preparation plan based on the ADOPT nursing model can reduce the readmission rate of stroke patients. The reasons for the analysis might be: During the nursing process, by combining multiple teams of nutritionists, psychological counselors, rehabilitation therapists, etc. for physical assessment, patients can have a clear understanding of their own conditions, better face the disease and possible risks, be able to face the disease more positively, and voluntarily achieve rehabilitation goals, which is conducive to reducing readmission rates, and patients' participation in formulating discharge plans, It can help patients better understand and be familiar with the relevant rehabilitation skills and knowledge, and assist them in home functional rehabilitation training. In this intervention program, by leveraging the supervisory role of family members, it can prompt patients to correct bad behavior, strictly follow the rehabilitation plan, and at the same time enhance disease education and skills training, enabling patients and family members to master some treatment methods, more effectively identify signs of recurrence, better deal with emergencies, and reduce unnecessary readmissions.

In summary, the discharge preparation program based on the ADOPT nursing model, when applied to patients with first-visit ischemic stroke, can not only improve patients' discharge readiness and self-efficacy and activities of daily living, but also effectively control patients' blood sugar and blood pressure levels and reduce the readmission rate within 3 months after discharge, which is worthy of reference.

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Disclosure statement

The authors declare no conflict of interest.

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