ORIGINAL RESEARCH

# Clinical Effect of a Prospective Nursing Model Combined with Humanistic Care in Patients with Acute Stroke

Lingling Wang, PhD; Ningning Dai, PhD; Maling Xiang, PhD; Jiucai Zhao, PhD


## ABSTRACT

**Objective** • To investigate the clinical effects of applying a prospective nursing model combined with humanistic care in patients with acute stroke.

**Methods** • A total of 160 patients with acute stroke who received treatment at The First Affiliated Hospital of Soochow University from July 2019 to July 2021 were selected as the study subjects. According to different nursing methods, the patients were divided into a control group of 80 patients, who received basic routine nursing care, and an observation group of 80 patients, who received a prospective nursing model combined with humanistic care. Hemodynamic status, the concentrations of interleukin-6 (IL-6), IL-8, and tumor necrosis factor, concentrations, SF-36 Survey scores, Self-Rating Anxiety Scale and Self-Rating Depression Scale scores, and nursing satisfaction were compared between the 2 groups.

**Results** • The hemodynamic status of the patients in the observation group, as measured by heart rate, arterial pressure, and blood oxygen saturation, was significantly improved compared with patients in the control group ($P < .05$). The concentrations of interleukin-6 (IL-6), IL-8, and tumor necrosis factor were significantly lower in the observation group than in the control group ($P < .05$). The SF-36 Survey scores were higher in the observation group than in the control group ($P < .05$). The Self-Rating Anxiety Scale and Self-Rating Depression Scale scores were lower in the observation group than in the control group ($P < .05$). Nursing satisfaction was higher in the observation group than in the control group ($P < .05$).

**Conclusion** • The application of a prospective nursing model combined with humanistic care in patients with acute stroke can effectively reduce concentrations of inflammatory factors, improve blood oxygen saturation, alleviate negative emotions such as depression and anxiety, and enhance the patients' quality of life and nursing satisfaction. Therefore, this model is worthy of clinical promotion and application. (*Altern Ther Health Med.* [E-pub ahead of print.])


**Lingling Wang, PhD**; **Jiucai Zhao, PhD**; Emergency Department, The First Affiliated Hospital of Soochow University, Suzhou, Jiangsu, China; **Ningning Dai, PhD**; **Maling Xiang, PhD**; Emergency Department, Dushu Lake Hospital Affiliated to Soochow University, Medical Center of Soochow University, Suzhou Dushu Lake Hospital, Suzhou, Jiangsu, China.

*Corresponding author: Maling Xiang, PhD*
*E-mail: zituo674329@163.com*
*Corresponding author: Jiucai Zhao, PhD*
*E-mail: duijiu375537@163.com*

## INTRODUCTION

Acute stroke refers to the rupture of blood vessels in the brain and the resulting damage or death of brain cells. It is a common cerebrovascular disease with high rates of disability and mortality. In mild cases, patients may experience mild numbness and sensory abnormalities, whereas severe cases can lead to hemiplegia, sensory impairments, and brain damage.[1,2] In critical conditions, patients may exhibit delirium, coma, hemiplegia, or even death.[3] The primary treatments for patients who have had an acute stroke are thrombolysis and endovascular thrombectomy. Due to the rapid onset and high severity of acute stroke, patients and their families often experience significant anxiety. Therefore, providing effective post-treatment nursing care for patients with acute stroke is crucial.

Routine nursing involves traditional nursing practices that focus on addressing patients' immediate needs and symptoms. It typically follows standard protocols and does not involve a proactive assessment of potential risks. Prospective nursing can significantly improve the prognosis of patients with acute stroke, it involves nurses using their theoretical knowledge and practical experience to predict the development of a patient's condition, identify potential risks early in the nursing process, and proactively intervene. This

approach transforms routine examinations into early warnings and implements targeted and proactive interventions, thus effectively controlling the progression of patients' conditions, reducing their suffering, and improving overall nursing and patient quality of life.[4-6] Humanistic care is a nursing model that emphasizes meeting the universal and common needs of individuals. It is based on the concept of patient-centered care and aims to develop diversified services that respect and tap into patients' inherent potential.[7,8]

Based on the above considerations, this study recruited 160 patients with acute stroke treated at The First Affiliated Hospital of Soochow University from July 2019 to July 2021 as the research subjects. The purpose is to analyze whether implementing a prospective nursing model combined with humanistic care can improve clinical outcomes and patient well-being in patients with acute stroke

## MATERIALS AND METHODS

### Study population

We enrolled 160 patients with acute stroke treated at The First Affiliated Hospital of Soochow University from July 2019 to July 2021 as the research subjects. General information such as gender, age, body mass index (BMI; calculated as weight in kilograms divided by height in meters squared), educational level, and disease type were collected for each patient. According to different nursing methods, the patients were divided into a control group of 80 patients, who received basic routine nursing care, and an observation group of 80 patients, who received a prospective nursing model combined with humanistic care. All patients had no immune dysfunction. All study participants and their families agreed to participate in the research and signed informed consent forms.

### Inclusion and exclusion criteria

**Inclusion criteria.** (1) Patients who met the diagnostic criteria for acute stroke; (2) patients aged over 18 years; and (3) patients with good treatment compliance.

**Exclusion criteria.** (1) Patients with severe cardiovascular disease; (2) pregnant patients; (3) patients with severe respiratory system disease; (4) patients with mental cognitive impairment; or (5) patients who withdrew from the study at any time.

### Nursing care interventions

**Control group.** Patients in the control group received basic routine nursing care. Mainly includes: Provide timely treatment to patients and provide respiratory support, medication guidance, psychological consultation, etc.

**Observation group.** Patients in the observation group received prospective nursing care combined with humanistic care. Established a nursing team, composed of 1 head nurse and 3 highly professional nurses. Regular nursing training sessions were conducted to enhance professionalism and nursing quality. On receiving an emergency call from a patient or family member, a brief inquiry about the patient's relevant condition was made to ascertain the emergency equipment available to the patient. Ambulance response time was required to be within 3 minutes, and contact was established with the family members during patient transit to provide appropriate reassurance, emotional support, and guidance. The nurses became proficient in the rescue sequence, and prompt treatment and comprehensive rescue systems were implemented, while adhering to the concept of "saving lives first, then treating injuries" and emphasizing the patient's "golden period" to optimize the patient's chance of survival. Initial assessment of the patient's condition was performed, and urgent interventions were promptly carried out. Respiratory support was provided, and oral and respiratory secretions were managed. Tracheal intubation was performed as needed, and at least 2 intravenous lines were placed. Measures were taken to prevent hyperthermia caused by the central nervous system or infection, including by temperature management (such as cold application and an ice cap), to reduce the patient's brain metabolic rate and prevent increased intracranial pressure. Concurrently, efforts were made to actively manage associated injuries caused by acute stroke.

Humanistic care was used to emphasize the importance of human values and to improve patients' physical and mental well-being. Adhering to this patient-centered nursing philosophy can enhance patients' cooperation. Bulletin boards and handbooks outside the ward were used to help patients understand their own conditions. Responsible nurses provided tailored health education based on patients' cultural literacy. Comprehensive assessment of patients' mental and psychological states was conducted, followed by effective psychological interventions and behavioral guidance. Emotional communication was established, and patients were fully respected. During communication with patients, close attention was paid to their facial expressions and eye contact. Positive suggestions were given together with targeted approaches, and active inquiries and reassurance were provided. Care was provided to patients, and in cases of evidence of loneliness, anxiety, or depression, the attending physician was promptly informed to collaborate with a psychologist to provide professional psychological interventions and medication, if necessary. Potential factors that might arise before nursing intervention were analyzed, and relevant emergency plans were formulated. Close supervision was reinforced, and family members were informed about the prevention of potential risks and precautions to take. A humanistic atmosphere was created to eliminate patients' psychological barriers. Timely guidance was provided, and reasonable diets were developed based on patients' individual circumstances. This fostered a relaxed and positive nursing environment and cultivated an optimistic mindset in patients.

### Observation indicators and evaluation criteria

**Hemodynamic status.** We compared vital signs such as heart rate, arterial pressure, and blood oxygen saturation between the 2 groups of patients after nursing intervention.

**Inflammatory factor concentrations.** We collected 3 mL venous blood from patients after nursing intervention. The blood was centrifuged at 1000 g for 10 minutes (TDZ6-

WS, Hunan Herexi Instrument & Equipment Co.,Ltd) to separate serum for testing. We used an enzyme-linked immunosorbent assay method to measure the concentrations of interleukin-6 (IL-6), IL-8, and tumor necrosis factor.

**Quality of life.** Patients' quality of life was assessed after the nursing intervention using the 36-Item Short Form Survey (SF-36), which is completed by caregivers. We mainly evaluate five dimensions (physical functioning, bodily pain, social functioning, emotional well-being, and energy), with scores ranging from 0 to 100. Higher scores indicate better quality of life for the patients.

**Self-Rating Anxiety Scale and Self-Rating Depression Scale.** We evaluated the negative emotions of patients in both groups using the Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS) on admission, as well as at 12 h, 24 h, and 48 h after the nursing intervention. The scores range from 0 to 100, with higher scores indicating more severe negative emotions in patients.

**Nursing satisfaction.** Assessing patient satisfaction with care after nursing intervention using a questionnaire developed by The First Affiliated Hospital of Soochow University. The questionnaire included 3 categories: very satisfied, fairly satisfied, and dissatisfied. Overall nursing satisfaction percentage = (number of very satisfied + number of fairly satisfied)/all patients x 100%.

### Statistical analysis

The research data were organized and analyzed using SPSS version 22.0 (IBM Corp). Continuous data are presented as mean (SD), and between-group comparisons were performed using *t* tests. Categorical data are presented as No. (%), and between-group comparisons were performed using $\chi^2$ tests. $P < .05$ indicates a statistically significant difference.

## RESULTS

### Baseline data

The baseline data of the 2 groups of patients were comparable, and there were no significant differences in the comparisons ($P > .05$; Table 1).

### Hemodynamic status

After nursing intervention, the patients in the observation group showed statistically significantly higher heart rate, arterial pressure, and blood oxygen saturation compared with the control group (all $P < .05$; Table 2).

### Inflammatory factor concentrations

After nursing intervention, the concentrations of the inflammatory factors IL-6, IL-8, and tumor necrosis factor were significantly lower in the observation group than in the control group (all $P < .01$; Table 3).

### Quality of life scores

Patients in the observation group showed higher SF-36 scores in vitality, somatic pain, physiological function, mental health, and energy compared with the control group (all $P < .01$; Figure 1).

**Table 1.** Comparison of Baseline Data

| Baseline data | | Control group (n = 80) | Observation group (n = 80) | $t/\chi^2$ | *P* value |
|---|---|---|---|---|---|
| Sex | Male | 59 | 55 | 0.3 | .65 |
| | Female | 21 | 25 | | |
| Age, y | Range | 21-65 | 22-67 | 0.0 | .46 |
| | Mean (SD) | 35.6 (10.1) | 35.5 (10.1) | | |
| BMI[a] | Range | 19.14-25.33 | 19.64-25.60 | 1.1 | .38 |
| | Mean (SD) | 22.57 (1.29) | 22.34 (1.15) | | |
| Educational level | Bachelor degree or above | 43 | 44 | 0.2 | .62 |
| | Bachelor degree or below | 37 | 36 | | |
| Disease type | Ischemic stroke | 42 | 45 | 0.2 | .61 |
| | Hemorrhagic stroke | 38 | 35 | | |

[a]BMI, calculated as weight in kilograms divided by height in meters squared.

**Abbreviation**: BMI, body mass index.

**Table 2.** Comparison of Hemodynamic Status

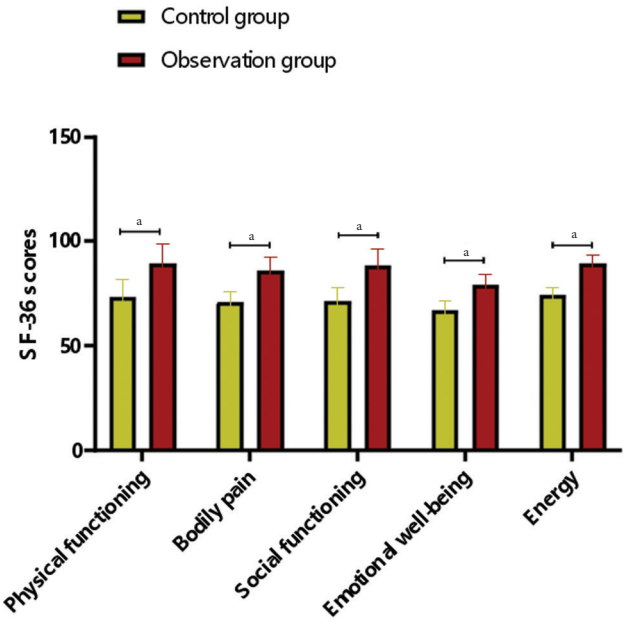
| Group | n | Heart rate, mean (SD), beats per minute | Arterial pressure, mean (SD), mm Hg | Blood oxygen saturation, mean (SD) % |
|---|---|---|---|---|
| Control group | 80 | 68.34 (0.51) | 76.45 (0.89) | 94.61 (0.77) |
| Observation group | 80 | 81.66 (0.53) | 81.52 (0.46) | 98.06 (0.98) |
| *t* | | 16.389 | 26.384 | 15.347 |
| *P* value | | <.05 | <.05 | <.05 |

**Table 3.** Comparison of Inflammatory Factor Concentrations

| Group | n | IL-6, mean (SD), μg/L | IL-8, mean (SD), ng/L | TNF, mean (SD), μg/L |
|---|---|---|---|---|
| Control group | 80 | 31.29 (7.58) | 34.84 (7.64) | 1.27 (0.77) |
| Observation group | 80 | 26.12 (5.34) | 29.35 (5.96) | 0.95 (0.46) |
| *t* | | 3.587 | 6.429 | 1.291 |
| *P* value | | <.05 | <.05 | <.05 |

**Abbreviations**: IL, interleukin; TNF, tumor necrosis factor.

**Figure 1.** Comparison of SF-36 Scores

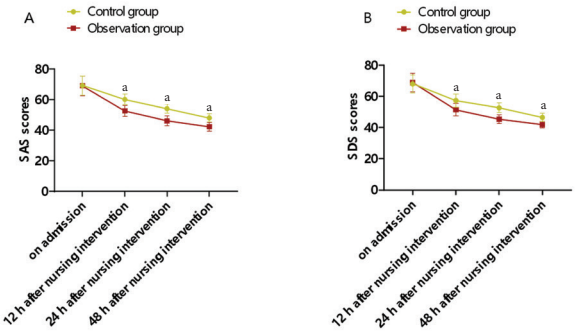



[a]indicates $P < .01$

### SAS and SDS scores

There were no significant differences in the SAS and SDS scores between the control and observation groups on admission ($P > .05$). The SAS and SDS scores were lower in the observation group than in the control group at 12 h, 24 h, and 48 h after nursing intervention($P < .01$; Figure 2).

**Figure 2.** Comparison of SAS and SDS Scores. The SAS scores (A) and SDS scores (B) were compared at different time points between the control and observation groups.




[a]$P < .01$, when comparing the control group and the observation group at the same time point.

**Note:** Data are presented as mean (SD).

**Abbreviations**: SAS, Self-Rating Anxiety Scale; SDS, Self-Rating Depression Scale.

**Table 4.** Comparison of Nursing Satisfaction

| Group | n | Very satisfied | Fairly satisfied | Dissatisfied | Overall nursing satisfaction percentage |
|---|---|---|---|---|---|
| Control group | 80 | 40(50%) | 27(34%) | 13(16%) | 67(84%) |
| Observation group | 80 | 58(73%) | 18(22%) | 4(5%) | 76(95%) |
| $\chi^2$ | - | 8.532 | 2.504 | 5.331 | 5.331 |
| *P* value | - | .003 | .114 | .021 | .021 |

### Nursing satisfaction

After nursing intervention, Overall nursing satisfaction percentage in the observation group (95%) was statistically significantly higher than in the control group (83.75%) ($P < .05$; Table 4).

## DISCUSSION

Acute stroke, also known as "brain attack," is primarily categorized into ischemic and hemorrhagic stroke. It predominantly affects middle-aged and older adults and is the leading cause of death and disability among this demographic in China.[9,10] Over the past decade, the incidence of stroke in China has seen a sharp increase, with approximately 2 million new cases of acute stroke reported each year. The incidence is influenced by factors such as age, gender, and regional environment, with ischemic stroke occurring more frequently than hemorrhagic stroke.[11,12] Early identification, prompt transportation, and specialized diagnosis and treatment are the primary principles for managing patients with acute stroke.

Studies, such as the one conducted by Chavva et al,[13] have shown that the prospective nursing model significantly improves the hemodynamics, quality of life, and negative emotions of patients with acute stroke. The findings of this study are consistent with this previous research. Our results demonstrated that all indicators tested were superior in the observation group to those in the control group and met the criteria for statistically significant differences. In particular, the SAS and SDS scores of the observation group were significantly lower than those of the control group.

The prospective nursing model is a predictable nursing approach that enhances patients' awareness of their own condition, emphasizes the importance of understanding the risks associated with acute stroke, facilitates patient-led lifestyle changes after nursing intervention, and reduces anxiety and depression among patients and their families caused by the sudden onset of the disease.[14,15] In the study conducted by Létourneau et al[16] on the combined effect of prospective nursing and humanistic care on patients who had a stroke, the authors demonstrated that the combination of these 2 nursing models can improve patients' inflammatory factors and increase nursing satisfaction. In our present study, the application of the prospective nursing model combined with humanistic care reduced inflammatory factor concentrations in patients with acute stroke compared with those patients in the control group who received routine nursing care. The application of the prospective nursing model combined with humanistic care also resulted in improved SF-36 scores for vitality, somatic pain, physiological function, mental health, and energy scores among the patients compared with those patients in the control group who received routine nursing care.

Current nursing models in clinical practice are increasingly emphasizing patient-centered care and advanced nursing principles. The prospective nursing model refers to nurses using their knowledge and clinical experience to make predictable assessments of patients' diseases and disease progression trends. It focuses more on guiding the overall care of patients, with a proactive approach that transforms reactive care into proactive care.[17,18] Simultaneously, the integration of humanistic care, which revolves around a patient-centered approach, is also important. Humanistic care refers to providing nursing services to patients that go beyond basic care and treatment by incorporating aspects of emotional and cultural care to meet patients' physical and psychological needs.[19-21] We found the nursing satisfaction rate was statistically significantly higher in the observation group than in the control group.

While the results of this study are promising, it is essential to acknowledge its limitations. The single-center nature of this study and the relatively small sample size may introduce some biases and limitations to the accuracy of the research findings. Future research should aim to address these limitations through larger-scale, multi-center randomized controlled trials. Furthermore, long-term follow-up assessments are needed to evaluate the sustained impact of these nursing models on patient outcomes.

In summary, the application of the prospective nursing model combined with humanistic care has demonstrated more significant clinical outcomes compared with conventional routine nursing models in patients with acute stroke. This prospective nursing model combined with humanistic care significantly improves patients' hemodynamics and effectively reduces inflammatory factors without increasing the risk of depression or anxiety, thus further enhancing the patients' quality of life.[22,23] Health care

institutions should consider adopting and scaling up these models in their stroke-care protocols. Further research and collaboration across multiple health care centers are needed to validate and refine these findings for broader application in stroke management.

## AUTHOR CONTRIBUTIONS

Lingling Wang, PhD and Ningning Dai, PhD served as co–first authors and contributed equally to the work.

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