

The Impact of Improved and Refined Education on Anxiety After Interventional Surgery for Cerebrovascular Disease

Cheng Wang¹, Haibo Zhao^{1*}, Huirong Zuo²

¹Department of Neurology, Shenzhen Jingcheng Medical Group Rugao Hospital, Nantong 226500, Jiangsu Province, China

²Xianmen Special Service Convalescence Center, Chinese People's Liberation Army, Fujian Xiamen 361005, China

*Corresponding author: Haibo Zhao, 332594419@qq.com

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Abstract: *Objective:* To explore the impact of modified and refined health education on anxiety among patients undergoing interventional therapy for cerebrovascular diseases. *Methods:* Eighty patients with cerebrovascular diseases who underwent interventional therapy at the hospital from June 2023 to June 2024 were selected as the study subjects. They were divided into an observation group and a control group according to the random number table method, with 40 patients in each group. The control group received conventional health education, while the observation group received modified and refined health education. The Self-Rating Anxiety Scale (SAS) scores were compared between the two groups after the procedure. *Results:* There were no significant differences between the two groups in terms of gender, age, education level, and duration of illness ($P > 0.05$). The SAS score in the observation group was significantly lower than that in the control group, showing a highly significant correlation ($P < 0.001$). *Conclusion:* Modified and refined health education can effectively reduce anxiety levels among patients undergoing interventional therapy for cerebrovascular diseases and improve their quality of life, making it worthy of clinical promotion and application.

Keywords: Cerebrovascular disease; Endovascular interventional surgery; Modified and refined health education; Anxiety; Self-Rating Anxiety Scale (SAS)

Online publication: January 13, 2025

1. Introduction

Cerebral angiography plays a pivotal role in the diagnosis of cerebrovascular diseases and is recognized as the “gold standard”^[1-3]. However, it is important to note that this examination method is invasive and often leads to changes in patients' blood pressure and heart rate^[2]. During the interventional treatment of cerebrovascular diseases, patients are often filled with concerns. On the one hand, they worry about the possible adverse reactions of the treatment, and on the other hand, they have doubts about the clinical efficacy. Such concerns make patients prone to developing negative emotions such as tension, anxiety, and depression, which can have various negative impacts

on them ^[4]. For example, anxiety may affect patients' sleep quality, thereby affecting their physical recovery; depression may reduce patients' enthusiasm for treatment and affect the treatment outcome. Health education plays a crucial role in this process. It can effectively improve patients' cognitive level of the disease, allowing them to better understand their condition's characteristics, treatment methods, and prognosis, thus helping them build confidence to overcome the disease ^[5]. However, traditional health education methods have certain limitations. Traditional health education often takes the form of oral explanations and distributing promotional brochures, which are generally more singular and not conducive to patients and their families' understanding and remembering the educational content. Moreover, traditional health education lacks personalization and cannot provide targeted education based on each patient's specific situation, making it difficult to achieve the desired results ^[6].

2. Materials and methods

2.1. General information

Eighty patients with cerebrovascular disease who underwent interventional therapy in the hospital from June 2023 to June 2024 were selected as the study subjects. The inclusion criteria were: (1) meeting the diagnostic criteria for cerebrovascular disease ^[7]; (2) aged between 20 and 75 years old; (3) undergoing interventional therapy for the first time; (4) signing the informed consent form.

The exclusion criteria were: (1) having severe cardiac, pulmonary, liver, kidney, or other organ dysfunction; (2) having severe mental illness; (3) being unable to complete the questionnaire survey. The patients were divided into an observation group and a control group using a random number table method, with 40 patients in each group.

2.2. Methods

Both groups of patients received interventional therapy for cerebrovascular disease, and routine preoperative education was provided, covering vital signs monitoring, neurological signs evaluation, medication guidance, etc.

2.3. Control group

Patients in the control group received routine preoperative education. The education content included disease-related knowledge, interventional surgery procedures, preoperative preparations, postoperative precautions, etc. Traditional methods such as oral explanation and distribution of promotional brochures were mainly used for implementation.

2.4. Observation group

2.4.1. Preoperative education

(1) Establish a good doctor-patient relationship

Doctors should proactively communicate with patients. Firstly, introduce themselves and the members of the interventional surgery team to allow patients to have a preliminary understanding and trust in the medical team. Then, gain a detailed understanding of the patient's condition, anxiety level, cognitive ability, learning style, and other aspects.

(2) Explain disease-related knowledge

Use illustrative educational manuals, vivid and intuitive videos, and other formats to explain the causes, pathogenesis, and hazards of cerebrovascular diseases, as well as the principles, advantages, and risks of interventional therapy, in an easy-to-understand manner.

(3) Introduce the interventional surgery process and precautions

Provide patients with a detailed explanation of the interventional surgery process, including preoperative

preparations such as clarifying the fasting time for food and water, skin preparation, and drug sensitivity tests. Inform them about possible experiences during the surgery, such as the level of pain during puncture and discomfort during contrast agent injection. Also, advise on postoperative precautions such as bed rest time, care methods for the puncture site, and dietary guidance. Conduct on-site simulations and demonstrations to help patients familiarize themselves with the surgical process, enhance their confidence in the surgery, and reduce their concerns and fears about the procedure.

2.4.2. Intraoperative education

- (1) Maintain a comfortable operating room environment
Strive to create a quiet, clean, and temperature-appropriate operating room environment. Playing soothing music can help alleviate patients' anxiety and allow them to undergo surgery in a relatively relaxed state.
- (2) Strengthen communication with patients
During the surgical procedure, doctors should closely monitor patients' emotional changes. Timely verbal communication with patients is essential to encourage their active cooperation during the surgery.

2.4.3. Postoperative education

- (1) Focus on patients' psychological changes
In the early postoperative period, medical staff should exert great importance on patients' psychological states. Promptly identify patients' anxiety and provide targeted psychological counseling. This helps patients relieve postoperative psychological stress and promotes their psychological recovery.
- (2) Guide patients in functional exercise
Develop personalized functional exercise plans based on the patient's specific conditions and physical status. Provide on-site guidance and supervision to ensure patients perform functional exercises correctly. This aids in the early recovery of patients' limb function and improves their quality of life.
- (3) Provide discharge guidance
Educate patients on the relevant knowledge of secondary prevention of cerebrovascular diseases. This includes the importance of a balanced diet, methods of moderate exercise, the benefits of regular sleep schedules, the necessity of smoking cessation and alcohol restriction, and the significance of controlling blood pressure, blood sugar, and blood lipids. Guide patients to take medications regularly and undergo periodic check-ups to prevent the recurrence of cerebrovascular diseases.

2.5. Observation indicators

The Self-Rating Anxiety Scale (SAS) was employed to evaluate the anxiety levels of patients in both groups. This scale consists of 20 items, rated on a 4-point scale where 1 to 4 represent "none or a little of the time," "some of the time," "a good part of the time," and "most or all of the time," respectively. Higher scores indicate more severe anxiety. A SAS total score of 50 or above is considered indicative of anxiety symptoms, with 50–59 being mild anxiety, 60–69 moderate anxiety, and 70 or above severe anxiety. Both groups of patients completed the SAS on the day before surgery and on the 7th day after surgery.

2.6. Statistical methods

Statistical analysis was performed using SPSS 27.0 software. Measurement data conforming to a normal distribution were expressed as mean \pm standard deviation (SD), and comparisons between the two groups were made using the *t*-test. Count data were expressed as the number of cases (*n*) and percentage (%), and comparisons between the two groups were conducted using the χ^2 test. A *P*-value less than 0.05 was considered statistically significant.

3. Results

3.1. Comparison of general information between the two groups

There were no statistically significant differences between the two groups in terms of gender, age, education level, and course of disease ($P > 0.05$), making them non-comparable (Table 1).

Table 1. Comparison of general information between the two groups

Group	Number of Cases (n)	Gender (n)	Average age (\pm s, years)	Average course of disease (\pm s, months)	Education level (n)	Men	Women	Junior high school and below	High school	University and above
Control group	40	20	20	58.35 \pm 11.72	6.23 \pm 1.17	15	12	13		
Observation group	40	18	22	56.21 \pm 11.18	5.85 \pm 1.98	17	11	12		
χ^2/t value		0.201	0.836	1.045	0.209					
p value		0.654	0.406	0.299	0.901					

3.2. Comparison of SAS scores between the two groups

The SAS scores of the observation group were significantly lower than those of the control group, showing a highly significant correlation ($P < 0.001$) (Table 2).

Table 2. Comparison of SAS scores between the two groups (\pm s, scores)

Group	Number of cases (n)	SAS score
Control group	40	57.65 \pm 16.77
Observation group	40	38.26 \pm 15.85
t -value		5.315
p -value		< 0.001

4. Conclusion

Cerebrovascular disease, as a common and frequently occurring disease that seriously harms human health, brings heavy burdens to countless families due to its high incidence, high disability rate, and high mortality rate. These characteristics of cerebrovascular disease make it one of the urgent problems to be overcome in the medical field^[8]. In recent years, endovascular interventional therapy has rapidly emerged as an important means of treating cerebrovascular diseases. Compared with traditional surgical procedures, endovascular interventional therapy has significant advantages, such as minimal trauma, faster patient recovery, and fewer complications. For this reason, it has gradually become the preferred method for treating cerebrovascular diseases^[9]. However, despite its many advantages, cerebrovascular interventional therapy is also a complex technique. Patients face multiple stresses during the perioperative period, including physical pain and psychological burden caused by the disease itself, as well as surgical trauma and unfamiliar hospital environments. Under the influence of these stresses, patients are prone to develop negative emotions such as anxiety, depression, and fear. These negative emotions not only affect their treatment compliance, making it difficult for patients to actively cooperate with treatment but also have adverse effects on the prognosis of the disease^[10]. Therefore, how to effectively alleviate the anxiety of patients after cerebrovascular interventional surgery, and thereby improve their prognosis, has become an important topic in clinical nursing work.

This study suggests that the SAS scores of patients in the observation group were significantly lower than those in the control group ($P < 0.05$), fully indicating that improved and refined education can effectively reduce the anxiety level of patients after cerebrovascular interventional surgery. An in-depth analysis of the reasons may be related to the following factors. On the one hand, according to relevant principles in the medical field, when patients are in a state of tension and anxiety, the excitability of the sympathetic nerves inside the human body will significantly increase^[11]. Under the effect of this physiological change, the content of substances with vasoconstrictive properties, such as catecholamines, in the blood will increase accordingly. The increase in the content of such substances will inevitably trigger a series of chained physical reactions, specifically manifested as a significant acceleration in the patient's heart rate and a synchronous increase in blood pressure. As a result, it greatly increases the chance of surgical complications, which can have a non-negligible negative effect on the smooth progress of interventional therapy and the prognosis of patients after surgery^[11]. On the other hand, it has been reported that there is a very close and direct correlation between the final effect of cerebrovascular interventional therapy and the quality of nursing care implemented^[12,13]. This fully illustrates the importance of quality and appropriate educational nursing for the effectiveness of cerebrovascular interventional therapy. In addition, the research results of many scholars also provide strong evidence for the above viewpoint from different perspectives. For example, Li *et al.* (2019) clearly stated in their related research that when psychological nursing is implemented for patients undergoing cerebrovascular interventional therapy, it can significantly reduce adverse emotions such as anxiety and depression generated by patients, and at the same time, it can also effectively reduce the probability of complications^[14]. Furthermore, in Yang (2017) on patients undergoing cerebrovascular interventional surgery, targeted nursing measures were taken^[15]. Specifically, patients were provided with extremely adequate educational work on interventional knowledge in the preoperative stage, enabling patients to have a comprehensive and in-depth understanding of their illness. After such treatment, the patient's anxiety has been significantly improved, and the incidence of complications has also shown a significant decrease after surgery.

In summary, improved and refined education is a safe and effective nursing intervention measure. It effectively alleviates the anxiety level of patients after cerebrovascular interventional surgery and improves the quality of life of patients by establishing a good nurse-patient relationship, providing comprehensive and diverse educational content, and focusing on psychological support. It is worthy of wide application in clinical practice. It is believed that the continuous in-depth research and application of improved and refined education, will bring good news to more patients with cerebrovascular disease, helping them better overcome the disease and return to normal life.

Disclosure statement

The authors declare no conflict of interest.

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