

Original Article

The effect of family empowerment nursing on severe neurosurgical patients

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Abstract: Objective: To analyze the application effect of family empowerment nursing in neurosurgery patients, and to provide psychological support and rehabilitation nursing guidance for the patients. Methods: A total of 86 patients in a neurosurgery intensive care unit (NICU) were selected and randomly divided into a control group (n=43) and a treatment group (n=43). The patients in the control group and their families were given conventional nursing in the NICU, while the patients in the treatment group were given family empowerment nursing intervention on that basis. After one month of nursing, an empowerment nursing questionnaire was used to evaluate the nursing effect, and the SF-36 scale was used to evaluate the patients' quality of life. Meanwhile, the nursing satisfaction, treatment compliance, and clinical complications were observed. Results: After one month of nursing, the scores of the dimensions of psychological nursing, comfortable service, and necessary information in the treatment group were significantly higher than they were in the control group (all $P < 0.05$). The SF-36 scale indicated that the mental health, social ability, general health, and the physiological function scores and the total score in the treatment group were significantly higher than they were before the intervention (all $P < 0.05$). The mental health, social ability, vitality, general health, and physical pain scores in the treatment group improved significantly after nursing ($P < 0.05$). The mental health scores in the control group decreased after the nursing ($P < 0.001$). The compliance rate in the treatment group (95.35%) was significantly higher than it was in the control group (74.42%, $P < 0.05$). The nursing satisfaction rate in the treatment group (97.67%) was significantly higher than it was in the control group (69.77%, $P < 0.01$). The incidence of complications in the treatment group (6.98%) was significantly lower than it was in the control group (23.26%, $P < 0.05$). Conclusion: Family empowerment nursing is quite effective in neurosurgery patients, and it can remarkably improve their quality of life, increase their treatment compliance and satisfaction, and greatly helps achieve a good prognosis. Therefore, it is worthy of clinical nursing popularization and application.

Keywords: Family empowerment care, severe neurosurgical patients, treatment compliance, nursing satisfaction, complication

Introduction

Severe neurosurgical illness is usually caused by craniocerebral trauma, acute and critical nervous system illnesses, and acute cerebrovascular diseases and is characterized by an acute onset, a severe condition, and a poor prognosis [1]. Acute attacks often aggravate the patients' and their families' tension, anxiety, and other negative emotions. At this moment, the help and support of the patients' families is necessary [2-4]. Therefore, it is vital for medical staff to give patients and their families reasonable nursing interventions during the monitoring [5]. Family empowerment refers to the process in which medical staff help fam-

ily members acquire care knowledge, skills, and resources in order to enable them to actively control their own lives and improve the patients' quality of life [6]. On the basis of empowerment, the medical staff and the main caregivers jointly formulate personalized care plans in order to solve the problems encountered by the main caregivers, so as to improve their caring ability and preparedness. Family empowerment nursing, a non-traditional nursing mode that pays attention to both process and result, focuses on the processes occurring after empowerment nursing and runs through the whole treatment [7, 8]. At present, it has been widely used in the clinical treatment of chronic diseases and tumors by foreign scholars and has gradually

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become an effective tool for improving the quality of life of patients with chronic diseases and their families [9-11]. However, it is seldom used in neurosurgery patients, and its effect has yet to be verified. The purpose of this study was to evaluate the value of family empowerment in improving the caring ability and preparedness of the main caregivers of neurosurgery patients, so as to provide psychological support and rehabilitation nursing guidance for patients.

Materials and methods

Research objects

A total of 86 patients admitted to the Neurosurgery Intensive Care Unit of Cixi People's Hospital from October 2017 to May 2018 were selected, and the patients and their families were divided into a control group (n=43) and a treatment group (n=43) according to a random number table. There were 25 males and 18 females in the control group, with an average age of (43.5±4.2) years. The treatment group consisted of 21 males and 22 females, with an average age of (44.0±5.1) years.

Inclusion criteria: Patients (1) diagnosed as critically ill after neurosurgery surgery according to the 2006 neurosurgery critical illness diagnosis and treatment guidelines [12]; (2) aged ≥18 years old; (3) with family caregivers; (4) unable to completely take care of themselves when admitted to the hospital with a functional life scale score ≤60; (5) recovering in their family home after discharge. Exclusion criteria: complicated with other serious diseases, such as a malignant tumor, heart failure, renal failure, etc. The inclusion criteria for the patients' families: (1) relationship with patients: spouse, parents, children, etc.; (2) responsible for the main nursing work both in-hospital and out-of-hospital, with the care time ≥4 h/day; (3) aged ≥18 years old; (4) with good reading comprehension and communication skills. Exclusion criteria: having participated in the relevant training. This study was approved by the Ethics Committee of Cixi People's Hospital, and the patients and their main caregivers voluntarily signed informed consent forms.

Research methods

The intervention method in the control group: The control group adopted conventional neuro-

surgery nursing such as condition monitoring, health education, psychological nursing and emergency care.

The intervention method in the treatment group: There were 2 neurosurgeons, 1 head nurse, and 2 team leaders in the family empowerment team (the team members were fixed) jointly implementing the intervention measures. One-on-one health education was carried out in the wards for at least 30 min. The family empowerment nursing was divided into three stages.

Stage 1: The first day of admission. The researchers introduced the patient's condition to their family members and gave them psychological counseling, such as pacifying emotions, emphasizing the great improvement nursing has on the patient's prognosis, patiently answering questions, and helping them prepare for long-term care.

Stage 2: From 3 days after admission to 1 day before discharge. The team implemented the family empowerment process. The specific process was as follows: (1) Clarify the problem: Cases with similar conditions and good prognoses were shared with the patients and their families, and the main caregivers were informed that the patients were expected to recover with active cooperation and rehabilitation exercises, so as to help them to establish confidence in their care. The care experiences of the main caregivers were questioned in an open-ended way in order to identify their problems in the care process. (2) Grasp the psychological status: The psychological feelings of the main caregivers when taking care of the patients were realized, such as fatigue, stress, or negative emotions, etc. The psychological feelings of the family members were also addressed. Moreover, it was also necessary to understand and respect the thoughts of the main caregivers who were encouraged to vent their negative psychological emotions to eliminate their anxiety, fear, and other negative emotions. (3) Formulate a care plan: The care problems were assessed with the family empowerment team as the leading factor and the main caregivers as the participants to initially formulate a care plan from the patient's emotions, sports, diet, medication, and living habits. The care plan was based on the outline of the health education manual for patients with neurological tu-

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mors after surgery and combined with the clinical symptoms and nursing problems. They actively solved the nursing difficulties of the patient's family members, and the nursing points were explained and demonstrated to them until they mastered the nursing methods. (4) Implementation plan: During the patients' hospitalizations, the researcher communicated with them and the main caregivers for 15-30 min every afternoon after the caregivers initially implemented the care plan. The main caregivers were evaluated, and their problems in the care plan's implementation were determined. If they cannot solve the problems by themselves, the researcher will give intensive guidance. According to the patient's symptom improvement and mood, the care ability of the main caregivers was affirmed, the successful care experience was summarized, and an affirmation of their important role in the improvement of the patient's condition was made. (5) Empowerment control: During the empowerment period, the process of empowerment implementation was constantly monitored, and the empowered family members were closely supervised to make the empowerment more effective.

Stage 3: One day before discharge. After the completion of family empowerment, the patients' family members were told about the postoperative precautions and adverse reactions of commonly used drugs, and the family emergency treatment methods were introduced to help them build confidence in family care.

Outcome measures: After 6 weeks of family empowerment nursing, the patients were asked to fill out a questionnaire. Before the investigation, the relevant contents and instructions on how to fill out the questionnaires were briefly introduced to the patients and their families. The patients completed the questionnaire independently. The questionnaires were collected uniformly and stored in a computer to ensure the authenticity and reliability of the data.

Family responsibility nursing questionnaire: This study consulted relevant documents to develop a family responsibility nursing questionnaire, which is mainly used to evaluate the patients' recognition of family empowerment nursing [13, 14]. The questionnaire mainly included the necessary information dimension,

the comfortable service dimension, and the psychological nursing dimension. Necessary information dimension: the complete information provided by patients; comfortable service dimension: the service status received by the patients in the nursing process; psychological nursing dimension: psychological changes in the patients' nursing process. And according to the Likert Scale, the scoring standard was determined as: 5 points indicates complete agreement, 4 points indicates agreement, 3 points indicates undefined, 2 points indicates disagreement, and 1 point indicates complete disagreement. The higher the score, the higher the degree of the patients' recognition.

Observe the treatment compliance from 3 aspects: Full compliance: Patients actively and regularly complete the medical treatment according to the requirements of the medical personnel; partial compliance: Patients treated and medicated when reminded by the medical personnel, or occasionally not treated regularly; non-compliance: Patients not taking the doctor's advice or discontinuing treatment [15]. Compliance rate = (number of full compliance + number of partial compliance)/total number * 100%.

Nursing satisfaction: A self-satisfaction questionnaire was designed with to measure the service attitude, technical level, health education, psychological education, and patient care [16]. The questionnaire had three options: very satisfied, satisfied, and dissatisfied. Total satisfaction rate = (number of very satisfied + number of satisfied)/total number * 100%.

Clinical complications: The clinical complications included pulmonary infections, venous thrombosis, joint movement, restriction and other complications. Total incidence = total complications/total number * 100%.

Statistical methods

All the data were analyzed using SPSS 22.0 software. The measurement data were expressed as the mean \pm standard deviation ($\bar{x} \pm sd$), and the comparisons between the two groups were determined using *t* tests. The count data were expressed as cases or percentages, and the comparisons between the two groups were determined using chi-square

Table 1. Comparison of the empowerment nursing questionnaire scores for the patients' families ($\bar{x} \pm sd$)

Dimension	Control group (n=43)	Treatment group (n=43)	t	P
Empowering psychological nursing	3.64±0.86	4.49±0.66	5.142	<0.001
Comfortable service	4.24±0.80	4.75±0.58	3.359	0.001
Necessary information	3.99±0.53	4.39±0.71	2.978	0.004

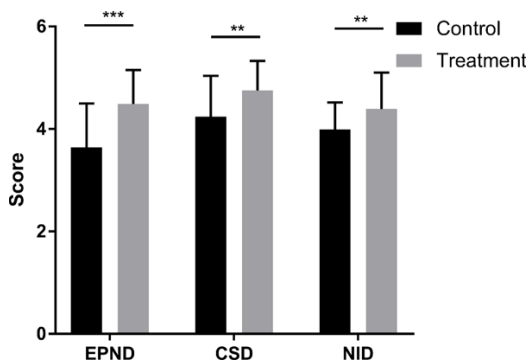


Figure 1. Comparison of the empowerment nursing questionnaire scores for the patients' families. EPND, Empowerment psychological nursing dimension; CSD, Comfort service dimension; NID, Necessary information dimension. **P<0.01, ***P<0.001.

tests. P<0.05 indicated that a difference was statistically significant.

Results

Comparison of the empowerment nursing questionnaire scores for the patients' families

The psychological nursing, comfortable service, and necessary information dimensions scores of the patients in the treatment group were significantly higher than those in the control group (all P<0.05). See **Table 1** and **Figure 1**.

SF-36 scale analysis

The study results showed that there was no significant difference in the SF-36 scale scores between the two groups before the nursing (P>0.05). After the nursing, the quality of life indicator scores, such as mental health, emotional function, social ability, vitality, general health, physical pain, physical role, and physical function, and the total scores in the treatment group were significantly higher than those in the control group. The mental health, social

ability, vitality, general health, and physical pain scores in the treatment group improved significantly after the nursing and with a significant difference (P<0.05). The mental health scores in the control

group decreased after the nursing with a significant difference (P<0.001). See **Table 2**.

Comparison of patient compliance

The compliance rates of the patients in the control and treatment groups were 74.42% and 95.35% respectively. Therefore, the compliance rate in the treatment group was significantly higher than it was in the control group (X²=6.198, P=0.013), and the difference was statistically significant (**Table 3**).

Comparison of nursing satisfaction

The nursing satisfaction rates in the control and treatment groups were 69.77% and 97.67% respectively. Therefore, the satisfaction rate in the treatment group was significantly higher than it was in the control group (X²=12.286, P<0.001), and the difference was statistically significant (**Table 4**).

Comparison of clinical complications

The incidence of clinical complications in the control and treatment groups were 23.26% and 6.98% respectively. The incidence of complications in the treatment group was significantly lower than it was in the control group (X²=4.440, P=0.035), and the difference was statistically significant (**Table 5**).

Discussion

Based on empowerment theory, family empowerment nursing fully understands the mental and psychological needs of the family members of critically ill patients through patient listening, timely communication and rapid feedback. And the nursing plan is adjusted to gradually guide patients and their families to participate in the nursing team treatment [16]. A study showed that the effective implementation of family empowerment nursing enables

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Table 2. Comparison of the SF-36 scale analysis scores ($\bar{x} \pm sd$)

Life quality index	Before nursing		After nursing	
	Control group (n=43)	Treatment group (n=43)	Control group (n=43)	Treatment group (n=43)
Mental health	65.00±11.11	64.38±10.08	55.19±10.60***	75.66±11.28###,***
Emotional function	47.33±18.48	54.49±21.23	47.78±21.13	57.34±19.89#
Social ability	78.51±20.76	74.99±21.45	78.98±22.93	87.90±17.80#,**
Vitality	63.00±11.05	64.79±10.89	64.61±10.99	69.85±10.00#,*
General health	38.75±8.59	38.06±9.08	38.79±10.16	46.45±10.34###,***
Physical pain	69.21±9.94	67.68±11.65	71.43±8.45	77.36±11.85#,**
Physical role	40.63±19.07	41.14±18.43	40.00±20.47	49.07±15.92#
Physical function	81.31±12.68	77.61±11.54	80.20±11.55	87.24±12.16##
Total scores	51.58±13.03	50.03±14.34	53.29±10.70	60.81±11.52##

Note: Compared with the control group after nursing, #P<0.05, ##P<0.01, ###P<0.001. Comparison of before nursing and after the nursing, *P<0.05. Compared with the control group after the nursing, **P<0.01, ***P<0.001.

Table 3. Comparison of patient compliance

Group	Control group (n=43)	Treatment group (n=43)	χ^2	P
Complete compliance	15	26		
Partial compliance	17	15		
Non-compliance	11	2		
Compliance rate	74.42	95.35	6.198	0.013

Table 4. Comparison of the nursing satisfaction

Group	Control group (n=43)	Treatment group (n=43)	χ^2	P
Great satisfaction	10	31		
Satisfaction	20	11		
Dissatisfaction	13	1		
Total satisfaction rate	69.77	97.67	12.286	<0.001

Table 5. Comparison of the clinical complications

Group	Control group (n=43)	Treatment group (n=43)	χ^2	P
Phlebothrombosis	4	1		
Pulmonary infection	2	1		
Limited joint movement	3	1		
Others	1	0		
Incidence	23.26	6.98	4.440	0.035

nursing staff to discover problems in time and deal with them accordingly, which not only improves the overall nursing quality, but also plays an important role in protecting the patients' rights and interests [11].

There was also a study finding that family empowerment nursing can effectively improve

epileptic patients' quality of life of and reduce the recurrence rate, indicating that in the process of family empowerment, patients can fully understand the progress of diseases, master relevant knowledge, enhance self-protection and prevention awareness, reduce the psychological and economic pressure, so as to benefit the prognosis and improve their quality of life [17]. Another study found that for AIDS patients and their families, the family empowerment plus regular family visits can effectively reduce the incidence of depression and enhance the confidence of patients. It shows that the empowerment fully respects the rights of patients and their families and greatly mobilizes their enthusiasm for active participation, thus avoiding their negative emotions, finally leading to patient recovery [18]. In our study, family empowerment nursing was adopted for neurosurgery patients. The nursing process of the patients and their families was observed

using a self-made nursing scale to clarify the patients' psychological changes and the therapeutic effects of family empowerment nursing. The results showed that the patients in the treatment group who received the family empowerment nursing had significantly higher scores in the dimensions of empowerment psychological nursing, comfortable service, and neces-

sary information than those in the control group who did not, suggesting that family empowerment nursing can help patients improve their psychological state and living comfort, and fully understand the disease-related information.

Health-related quality of life refers to the measurement of health status and the subjective satisfaction related to personal life events associated with diseases, accidental injuries, and medical interventions [19, 20]. The SF-36 Scale is an important means to evaluate the health-related quality of life, mainly including physical health and mental health [21, 22]. A cross-sectional study by Salim et al. assessed the quality of life of patients with pacemakers using the SF-36 scale [23]. The results showed that the quality of life increased significantly with an increase in the SF-36 scores, suggesting that the scale has a guiding significance for the quality of life. Our study investigated the changes in patients' quality of life through the SF-36 scale, mainly including 8 dimensions of general health, mental health, physical pain, vitality, social ability, emotional function, physical role and physical function. The results showed that the scores of the 8 dimensions and the total scores in the treatment group were significantly improved and were higher than those in the control group after nursing care. Therefore, it is believed that family empowerment nursing can significantly improve neurosurgery patients' quality of life.

Duan et al. found that the compliance rate and nursing satisfaction of patients who adopted family empowerment nursing were significantly higher than those of the control group [24]. Meanwhile, our study found that the patients in the treatment group had higher treatment compliance and nursing satisfaction than those in the control group, while the incidence of complications was lower than it was in the control group, similar to the above research results. This shows that family empowerment nursing can obviously improve the psychological states and comfort levels of patients and enable them to quickly understand disease-related information. Moreover, it can improve the treatment compliance and satisfaction and the prognosis of patients.

Family empowerment for neurosurgery patients and their main caregivers during hospitalization can make the medical staff give personalized

assessment and care guidance for the main caregivers, which obviously improves their comprehensive care ability and care readiness and promotes the patient's recovery. However, due to limited time, a small sample size, and a lack of follow-up after the intervention, the long-term effects of family empowerment needs to be further verified by expanding the sample size and conducting a long-term follow-up.

Disclosure of conflict of interest

None.

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