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Snyder Hopes the Application of Theoretical Model of Nursing Intervention in Patients with Brain Malignancy Surgery

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Abstract: Explore the application value of nursing intervention based on Snyder hopes theory in patients with brain malignancy surgery. Methods The 110 cases of patients with brain malignancy who were treated in our hospital from January 2023 to January 2024 were selected as a study object. They were randomly divided into observation group and control group. The control group was received routine nursing. The hope theoretical intervention was performed on this basis in the observation group. The Herth hope index (HHI), self - rating anxiety scale (SAS), self - rating depression scale (SDS) and self-feeling burden scale (SPBS) scores of the two groups were compared before and after intervention. Both groups were followed up for 6 months, using the Concise Questionnaire for Psychological Adaptation of Cancer Patients (Min-MAC-19) and the Quality of Life Scale for Brain Tumor Patients (QOL-C30) to assess the improvement of patients' psychological adaptability and quality of life. Results After intervention, the SAS, SDS, and SPBS scores of the two groups were significantly reduced, and the HHI score was significantly increased. The SAS, SDS, and SPBS scores of the observation group were significantly lower than the control group, and the HHI score was significantly higher than the control group. The differences were statistically significant ($P<0.05$); After 6 months of follow-up, the observation group Min-MAC-19 and QOL-C30 scores were significantly higher than the control group ($P<0.05$). Conclusion Nursing intervention based on Snyder's hope theory can improve the mental state of patients after brain malignancy surgery, reduce the patient's self-experience burden, improve their hope level, psychological adaptability, and improve the quality of life of patients.

Keywords: Snyder Hopes Theory; Brain Malignancy; Nursing Intervention.

1. Introduction

Brain tumors are tumors that occur in the nervous system within the cranial cavity. Malignant brain tumors mainly include gliomas, medulloblastomas, germ cell tumors, etc. These patients often have complex conditions and poor prognosis. The best treatment method is surgical resection, but due to the unresectability of normal brain tissue and the extensive infiltration and growth of malignant tumors into the skull, it is extremely difficult to completely remove them on a large scale through surgery. Therefore, in clinical practice, postoperative adjuvant radiotherapy and chemotherapy are often used to treat this disease. When such patients go through a painful surgical period, they still need to go through a difficult postoperative recovery period. When discharged from home, due to factors such as decreased self-care ability, poor adaptation to family roles, reduced social activities, and heavy economic burden, patients may experience negative psychological states such as decreased hope and belief, varying degrees of inferiority, fear, anxiety, and depression. If these negative psychological states are severe, there is a possibility of suicide. Early clinical nursing often focuses on the disease itself, while neglecting the postoperative psychological and social adaptation abilities of patients. Research has found that hope is an important personality force for humans to cope with difficulties. It is an individual's expectation for a better future and the hope to overcome hardships in their heart, and is an important psychological trait. In Snyder's theory of hope, hope is a positive dynamic that occurs in an interactive state and is a good upward purposeful energy. A study has found that when this theory is applied to clinical nursing work, patients' hope index and quality of life can be improved [5]. Snyder's hope theory model mainly intervenes in subjects from the three elements of goal, path thinking, and motivational thinking to maintain their hope level. By bringing positive effects to the subjects themselves, they can reshape their confidence in life, alleviate their negative emotions, and help them improve their social and psychological adaptation level [6]. However, there are currently no reports on the application of Snyder's Hope Theory in the nursing of postoperative patients with malignant brain tumors. Therefore, in order to explore the application value of nursing interventions based on Snyder's hope theory in postoperative patients with malignant brain tumors, this study retrospectively included 110 patients with malignant brain tumors admitted to our hospital, and now reports as follows.

2. Data

General Information: 110 patients with malignant brain tumors admitted to our hospital from January 2023 to January 2023 were selected as the research subjects. The inclusion criteria were: (1) initial surgical treatment with postoperative pathological diagnosis of malignant brain tumors; (2) Having a primary school education or above; (3) The patient voluntarily participates and is able to independently complete the questionnaire, and the quality of completion meets the requirements; (4) All patients and their families are aware of and actively cooperate with the nursing plan, and have signed informed consent forms; (5) Clinical data is complete. Exclusion criteria: (1) Patients with severe neurological and cognitive impairments; (2) Patients with tumor recurrence; (3)

Age<18 years old; (4) Those who have been lost to follow-up for more than 2 months and have ineffective communication. According to the random number table method, the research subjects were divided into a control group and an observation group, with 55 cases in each group.

In the observation group, there were 39 cases of glioma, 9 cases of medulloblastoma, 5 cases of germ cell tumor, and 2 cases of meningeal sarcoma; 32 males and 23 females; Age ranged from 24 to 65 years old, with an average of (47.56 ± 5.12) years old; Education level: 6 cases in primary school, 12 cases in junior high school, 20 cases in high school, and 17 cases in college or above; Medical payment methods: 12 cases were self funded, and 43 cases were covered by medical insurance. In the control group, there were 37 cases of glioma, 7 cases of medulloblastoma, 8 cases of germ cell tumor, and 3 cases of meningeal sarcoma; 34 males and 21 females; The age range is 23 to 69 years old, with an average of (46.86 ± 5.31) years; Education level: 6 cases in primary school, 11 cases in junior high school, 22 cases in high school, 16 cases in college or above. Medical payment method: self funded in 13 cases, medical insurance in 42 cases. There was no statistically significant difference in general information between the two groups of patients (P>0.05), and the baselines of the two groups were basically the same. This study has been reviewed by the hospital ethics committee.

3. Methods

3.1. The Control Group Received Routine Postoperative Care for Malignant Brain Tumors

3.1.1. Postoperative Observation and Nursing:

1. Observe the patient's vital signs (electrocardiogram monitoring; patient consciousness, pupil, GCS score; SPO_2, Heart rate, body temperature, blood pressure values). If the patient is unconscious, with unequal pupils on both sides, hemiplegia of the contralateral limb, and an increase in blood pressure and a decrease in respiratory pulse, it indicates a possible risk of cerebral herniation or hematoma; 2. Diet. Fasting on the day after surgery, changing to liquid diet one day after surgery, gradually transitioning to semi liquid and regular diet. Provide a high protein, high calorie, and high vitamin diet. If unconscious and have difficulty swallowing, nasal feeding can be given; 3 positions. Before general anesthesia, lie flat with the head tilted towards the healthy side. For those with stable blood pressure after awakening, raise the head by 30 degrees. For those who are agitated, use restraint protection; 4. Wound care. Closely observe the condition of the wound. If it is a persistent bright red color, active bleeding should be considered and the doctor should be notified in a timely manner; Keep the dressing clean and dry, fix the head catheter properly, without folding, twisting, or compression, and record the color, shape, and amount daily; 5 drug treatments. Follow the doctor's advice to administer dehydrating agents on time, use antibiotics reasonably, and prevent infections.

3.1.2. Prevention and Nursing of Complications:

1. Prevent pulmonary infection, maintain airway patency, and for those who are unconscious, have weakened or disappeared cough swallowing reflex, tilt their head to one side, regularly turn over and pat their back, and nebulize inhalation; 2. Strengthen oral and skin care, prevent oral infections, and avoid pressure ulcers; 3. Prevent urinary tract infections, keep the catheter unobstructed, observe and record the color, shape, and amount of urine; Observation and nursing of epilepsy. For those with a history of epilepsy or surgical sites near the frontal or temporal lobes, it is necessary to observe for the occurrence of epilepsy and closely monitor for premonitory symptoms. During an attack, pay attention to safety, undo your collar, tilt your head to one side, prevent tongue bites, use oral and pharyngeal airway to keep the airway unobstructed, continue oxygen inhalation, record the attack time, duration, number of attacks, and take medication in a timely manner. And conduct specialized disease lectures and postoperative related knowledge dissemination within the department, provide discharge guidance, and use telephone follow-up to urge patients to have timely follow-up examinations.

3.2. On the Basis of the Control Group, the Observation Group Received Postoperative Nursing Interventions based on Snyder's Hope Theory Model

3.2.1. Establish a Postoperative Intervention Team for Patients with Malignant Brain Tumors.

The intervention team consists of 8 professional medical staff. One head nurse of the neurosurgery department serves as the team leader, three nurses specializing in neurosurgery, three doctors specializing in neurosurgery, and one physician specializing in psychosomatic medicine. The core work content, process, management mode, and patient management methods of the postoperative intervention group for malignant brain tumor patients, as well as the selection of effectiveness evaluation indicators, were completed by three senior professional title personnel; Qualified subjects will be completed by three personnel with intermediate professional titles; Two junior professional titles are responsible for implementing intervention measures.

3.2.2. Training:

The intervention team leader will provide training to three specialized nurses to clarify the main content of the theory of hope, the concepts and implementation steps of the three major elements. When setting goals, it is necessary to clarify the intervention plan for patients with malignant brain tumors after surgery, namely "motivational thinking", and provide "motivation" to promote the achievement of goals; The significance and value of the concept of hope after brain tumor surgery, and the impact of hope on postoperative recuperation of patients; Clarify the method of data collection. After a week of training and testing, three specialized nurses have acquired the ability to implement.

3.2.3. Establish Individualized Health Records for Patients to Evaluate Them

For eligible subjects, professional personnel will store and archive their clinical data, including general demographic information such as patient name and gender, as well as clinical information such as pathological diagnosis and grading, under the condition of signing informed consent. And evaluate their psychology, hope level, and self-perceived burden before intervention.

3.2.4. Snyder Hopes That the Application Steps of the Theoretical Model of Nursing Intervention in Postoperative Patients with Malignant Brain Tumors Will be Based on the Three Elements of the Theoretical Model:

goals, path thinking, and dynamic thinking. After

consulting relevant literature [7-8] and combining with the actual postoperative nursing situation of patients, the intervention team's specialized nurses in the field of brain surgery will jointly develop an application plan with patients and their families (Table 1).

Table 1. Application Plan of Snyder's Hope Theory Model Nursing Intervention in Postoperative Patients with Malignant Brain Tumors

Essential factor	Reference plan	Application plan
Objective	1. Set and implement proactive tiered goals; 2. The principle is to help participants establish a positive hope state. From simple to complex, from low-level to high-level, break down big goals into daily, weekly, and monthly completion; 3. Based on the patient's personal wishes or needs.	1. Develop a "Postoperative Health Education Plan for Malignant Brain Tumor Patients" based on individual health records; 2. Select targeted plans based on individual patient needs, following the principle of "urgency and delay". After completing the current goal, move on to the next goal. For those who have not completed it, analyze the reasons with the patient and their family and propose solutions
Path thinking	1. Patients and their families obtain methods to achieve this goal; 2. Predict possible outcomes; Provide timely feedback and adjust the 'path'.	1.Based on the health problems of the patients, the intervention group prepares a postoperative health management manual for the patients; 2. Guided by specialized nurses, plan road goals, and guide patients to record detailed management content of home care, and bring and provide feedback on the real situation when they come to the hospital for re examination; The specialist physician shall fill in the results of cranial MRI or brain CT, as well as disease-related clinical indicators after each follow-up examination. Specialist nurses are responsible for filling out adjustment plans for language recovery, self-care ability, and limb movement rehabilitation, and patiently introducing them to patients and their families. 3. Help patients establish a relationship between the present and their goals, making them aware of the importance of self-worth. After achieving the goal, encourage them to move on to the next goal; If it is not achieved, timely analyze the problem with the patient and their family, and plan the "path" again to achieve the goal.
Dynamic thinking	1.Applying psychological techniques to improve patients' self-efficacy and psychological level; 2.Enhance patients' motivational components and increase their subjective initiative.	1.Adopting a commitment strategy to enhance patients' subjective initiative and self-management enthusiasm. Happiness factor method: Collect factors that make patients feel happy from their personality traits, family situations, and other aspects. And strengthen intervention for patients with severe negative psychological emotions; 3.Positive reinforcement method: Enhance rehabilitation confidence through leading by example and group discussions; 4.The intervention process is strictly supervised by caregivers and assisted by intervention teams to ensure the quality of intervention measures.

3.2.5. Develop Management Plan 1:

Prior to discharge, distribute targeted health education manuals based on the individualized health needs of patients, explaining to them the role of nursing interventions based on the Hope Theory model in preventing tumor recurrence, reshaping life beliefs, and improving quality of life; Two telephone follow ups will be conducted on patients at half a month, one month, three months, and six months after discharge to assess their level and quality of implementation of health education content at home, and to establish a comprehensive out of hospital follow-up system. Advise patients to undergo outpatient follow-up examinations one month, three months, and six months after surgery. During the follow-up examinations, new issues should be re evaluated and solutions proposed for the problems.

3.3. Observation Indicators

3.3.1. Psychological Assessment:

Use the Self Rating Anxiety Scale (SAS), Self Rating Depression Scale (SDS), Herth Hope Scale (HHI), and Self Perceived Burden Scale (SPBS) to assess changes in patients' psychological burden and hope levels. The SAS and SDS scales [9] both consist of 20 items, each worth 1-4 points, and are used to indicate the frequency of anxiety and depression. The scores are positively correlated with the severity of anxiety and depression. When the SAS score is greater than 50, it indicates the presence of anxiety; SDS score>53 indicates the presence of depression. The HHI [10] scale includes three dimensions: maintaining intimate relationships with others (I), taking positive actions (P), and having a positive attitude towards reality and the future (T), with a total of 12 items. Each item is scored 1-4 points based on "strongly disagree", "disagree", "agree", and "strongly agree", with a total score of 48 points. The score is positively correlated with the desired level. The SPBS scale [11] includes dimensions such as worrying about others and psychological reactions, covering various aspects from social to physical to emotional burden. There are a total of 10 items, with each item scoring 1-5 points. The higher the score, the heavier the perceived burden.

3.3.2. Follow up Status:

Both groups of patients were followed up for 6 months after discharge

The Brief Cancer Patient Psychological Adaptation Questionnaire (Min-MAC-19) and the Brain Tumor Patient Quality of Life Scale (QOL-C30) were used to evaluate the improvement of patients' psychological adaptation ability and quality of life. The Min-MAC-19 questionnaire consists of 19 items, including three factors: helplessness/hopelessness, anxiety, and positive attitude. According to the 4-point scoring method from "definitely not my situation" to "definitely my situation", which scores 0-3 points, all are positive scoring, and the score of each factor is directly proportional to the situation in this section. The QOL-C30 scale has a maximum score of 100, with higher scores indicating better quality of life.

3.4. Statistical Analysis was Performed Using SPSS 22 0 Statistical Software.

Count data is expressed as percentages, while metric data is expressed as mean ± standard deviation ($\bar{x}\pm$ s). Within group LSD-t test, $P<0.05$ indicates statistically significant differences.

4. Results

4.1. Comparison of SAS and SDS Scores between the Two Groups before and after Intervention

There was no statistically significant difference in SAS and SDS scores between the two groups before and after intervention (P>0 05); After intervention, the SAS and SDS scores of both groups were significantly reduced, and the scores of the above scales in the observation group were significantly lower than those in the control group (P<0.05). Table 2.

Table 2. Comparison of SAS and SDS scores before and after intervention ($\bar{x}\pm s$)

		SAS scores		SDS scores	
	n	Before intervention	After 4 weeks of intervention	Before intervention	After 4 weeks of intervention
Observation group	55	66.00±4.73	55.07±3.67	65.98±4.43	55.27±3.49
Control group	55	65.52±3.78	59.70±3.49	65.37±3.19	59.73±3.41
t		0.585	-6.796	0.833	0.576
p		0.560	<0.001	0.407	<0.001

4.2. Comparison of Self-Perceived Burden and Hope Level Scores between the Two Groups Before and After Intervention

There was no statistically significant difference in SPBS and HHI scores between the two groups before intervention (P>0.05). After intervention, both groups showed a significant decrease in SPBS scores and a significant increase in HHI scores. The SPBS scores of the observation group were lower than those of the control group, while the HHI scores were higher than those of the control group, and the differences were statistically significant (P<0.05). Table 3.

Table 3. Comparison of Self perceived Burden and Hope Level Scores before and after Intervention ($\bar{x}\pm s$)

	SPBS scores		HHI scores	
	Before intervention	After 4 weeks of intervention	Before intervention	After 4 weeks of intervention
Observation group(n=55)	35.00±2.88	20.36±2.80	25.80±2.62	38.29±3.22
Control group(n=55)	35.22±2.92	25.58±2.05	26.20±2.94	34.84±2.95
t	-0.394	-11.153	-0.753	5.864
p	0.694	<0.001	0.453	<0.001

4.3. Comparison of Social and Psychological Adaptability between Two Follow up Groups Before Intervention

Table 4. Comparison of Psychological Adaptability before and after Follow up ($\bar{x}\pm s$)

		Helpless/hopeless	Anxious	Positive attitude
Observation group(n=55)	Before intervention	9.04±2.30	8.27±2.34	11.21±2.22
	Follow up for 6 months	6.31±1.59	6.49±1.57	13.09±2.89
Control group(n=55)	Before intervention	9.16±1.86	7.78±2.54	11.53±3.58
	Follow up for 6 months	8.51±1.63	8.00±1.99	12.02±1.75
t_1		-0.319	1.054	-0.544
p_1		0.751	0.294	0.588
t_2		-7.172	-4.410	2.356
p_2		<0.001	<0.001	0.020

(t_1 and p_1 represent the comparison before intervention; t_2 and p_2 : represent the comparison after 6 months of follow-up after intervention.)

Table 5. Comparison of quality of life before and after follow-up($\bar{x}\pm s$)

	Before intervention	Follow up for 6 months
Observation group(n=55)	54.87±3.53	83.89±2.52
Control group(n=55)	54.40±3.40	65.89±2.50
t	0.714	37.599
p	0.477	<0.001

There was no statistically significant difference (P>0.05) in the Min-MAC-19 Scale scores between the two groups; After a 6-month follow-up, both groups showed a significant increase in positive attitude scores and a significant decrease in helplessness/hopelessness scores, with the observation group showing a significantly higher degree of change compared to the control group (P<0.05). Table 4. Before the intervention, there was no statistically significant difference in the QOL-C30 scores between the two groups in terms of quality of life during follow-up (P>0.05); After 6 months of follow-up, both groups showed a significant increase in the scores of the above-mentioned scales, with the observation group showing a significantly higher increase than the control group (P<0.05). Table 5.

5. Discussions

As a common malignant tumor in clinical practice, cranial tumors not only compress intracranial nerves and blood vessels, but also pose a serious threat to the safety of patients' lives [13], and have a high degree of disability. At present, its treatment mainly involves surgical resection of the tumor portion to solve the problem of blood imbalance in the patient's brain or spinal cord. Surgery, as a strong stressor, causes frequent emotions such as fear, loneliness, anxiety, and depression in patients, leading to a decrease in hope levels and a huge impact on their postoperative recovery and quality of life [14]. With the shift from traditional medical models to biopsychosocial medical models, the psychological and mental problems of cancer patients have gradually attracted more attention from scholars [15]. A qualitative study conducted by domestic scholar Xu Yirong on cancer patients showed that when most cancer patients face illness or death, they hope that theory can bring important positive emotional experiences to patients. There are also quantitative studies that have found a strong correlation between the quality of life and psychological status of patients and their level of hope. Specifically, when the patient's desired level increases, their immune system becomes stronger and the incidence of negative emotions decreases [17]. Snyder [18] believes that hope is a positive dynamic state generated through interaction, and his hope theory model mainly includes three elements (namely, dynamic thinking, path thinking, and goals). "Goal" is the core of hope, "dynamic thinking" is the driving force for achieving goals, and the patient's own cognitive ability to find effective ways is another element, namely "path thinking" [19-20]. Therefore, adopting the Hope Theory model of nursing intervention is of great significance for postoperative patients with malignant brain tumors.

Snyder hopes that the nursing intervention of the theoretical model can be applied to the care of postoperative patients with malignant brain tumors, reducing their negative emotions and self perception burden, and improving their level of hope. The results in Table 2 and Table 3 show that the SAS and SDS scores of the observation group were significantly lower than those of the control group (P<0.05), the SPBS score of the observation group was lower than that of the control group, and the HHI score was higher than that of the control group, with statistically significant differences (P<0.05). The reason for the analysis is that: 1. The intervention group established clear individual goals for patients and jointly developed health education plans with their families, achieving the unity of patients' medical needs and personalized needs. Compared with conventional nursing models, it can enhance communication and interaction between nurses and patients; 2. Adopt path thinking and distribute postoperative health management manuals to patients, allowing them to self manage and record during home rehabilitation. Medical staff can evaluate and provide feedback based on the monitoring indicators obtained from each patient's follow-up examination, forming a path thinking approach. If new problems are discovered that prevent the goal from being achieved, re plan the 'path' to improve patient compliance; Simultaneously applying the dynamic thinking method and combining psychological techniques to increase patients' subjective initiative, teaching them ways to relieve negative emotions, and establishing life beliefs.

Snyder hopes that the nursing intervention of the theoretical model can be applied to postoperative patients with malignant brain tumors. After a follow-up of 6 months, Table 4 and Table 5 show that in terms of social and psychological adaptation ability, the scores of the positive attitude dimension in both groups have significantly increased, while the scores of the helplessness/hopelessness dimension have significantly decreased. Moreover, the observation group has a significantly higher degree of change than the control group (P<0.05); In terms of quality of life, both groups showed a significant increase in their scores, with the observation group showing a significantly higher increase than the control group (P<0.05). This indicates that nursing interventions based on Snyder's theory of hope can significantly improve the psychological and social adaptability of postoperative patients with malignant brain tumors, enhance their acceptance and adaptation to the disease, and significantly improve their quality of life.

Conflicts of Interest

The authors declare that they have no conflict of interest.

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