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Effect of Optimized Sleep Nursing in Critical Patients with Respiratory Medicine

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Abstract: Objective: To observe the effect of optimized sleep nursing in severe patients in respiratory medicine department, and to explore a scientific nursing model to improve their sleep quality and promote recovery. **Methods:** A total of 86 critically ill patients admitted to the ICU of the Respiratory Department of our hospital were selected and divided into the control group and the observation group according to the nursing methods, with 43 cases in each group. The control group received routine sleep nursing, and the observation group received optimized sleep nursing. The sleep quality score, respiratory function index, complication rate and rehabilitation process before and after nursing were compared between the two groups. **Results:** After nursing, the sleep quality score of the observation group was lower, the respiratory function index was better, the complication rate (4.7%) was lower than that of the control group (18.6%), and the hospitalization time was shorter, and the difference was significant ($P < 0.05$). **Conclusion:** Optimized sleep nursing can improve patients' sleep, optimize respiratory function, reduce the risk of complications, and accelerate recovery, which is worthy of promotion.

Keywords: respiratory medicine; critically ill patients; optimized sleep care; sleep quality; respiratory function; rehabilitation effect

Introduction

Severe patients in the Department of Respiratory Medicine often suffer from severe lung diseases. Their condition is critical and changes rapidly, often accompanied by breathing difficulties, chest tightness, cough and other symptoms. Due to the need for long-term bed rest and invasive operations, their sleep quality is generally poor. Sleep is of great significance for the human body to restore physical strength and regulate immune function, but the incidence of sleep disorders in such patients is as high as 78.3%, and there are problems such as difficulty falling asleep, sleep fragmentation, and easy waking up at night. Long-term lack of sleep will lead to decreased immunity, deterioration of respiratory function, increase the risk of complications, delay recovery or even aggravation of the disease. Conventional sleep care is not targeted and systematic, and it is difficult to meet the needs. Therefore, this article selected 86 patients to explore the optimization of sleep care

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effects, providing references for clinical nursing and improving prognosis.

1. Materials and methods

1.1 General information

86 severe patients admitted to the ICU of the Department of Respiratory Medicine in our hospital from January 2024 to January 2025 were selected as the research objects, and they were divided into control group and observation group according to the nursing method, with 43 cases in each group.

In the control group, there were 23 males and 20 females; aged 45-78 years, with an average age of (61.5 ± 8.3) years; disease type: 21 cases of severe pneumonia, 13 cases of acute exacerbation of chronic obstructive pulmonary disease, 6 cases of respiratory failure, and 3 other cases; Acute Physiology and Chronic Health Status II(APACHE II score) 18-28 points, with an average of (23.1 ± 3.2) points.

In the observation group, there were 22 males and 21 females; ages were 46-79 years old, with an average age of (62.1 ± 8.5) years; disease types: 20 cases of severe pneumonia, 14 cases of acute exacerbation of chronic obstructive pulmonary disease, 7 cases of respiratory failure, and 2 other cases; APACHE II scores were 17-29, with an average of (23.5 ± 3.4) points. There was no significant difference in general data such as gender, age, disease type, and APACHE II scores between the two groups ($P > 0.05$), and they were comparable. All patients met the critical diagnostic criteria of respiratory medicine, were conscious, and could cooperate to complete the sleep quality assessment; patients with severe heart, liver, kidney and other organ failure, mental illness, cognitive impairment, and inability to cooperate with nursing were excluded. This study was approved by the ethics committee of our hospital, and all patients and their families signed informed consent forms [1].

1.2 Methods of care

The control group adopted routine sleep care mode, which mainly included: keeping the ward clean and quiet, regularly opening windows for ventilation, and maintaining appropriate temperature and humidity; giving patients pain relief, cough relief, asthma and other drug treatments according to the doctor's instructions to relieve physical discomfort; rationally arranging nursing operation time, try to avoid unnecessary operations at night to interfere with the patient's sleep; guiding patients to develop regular work and rest habits and avoid emotional agitation before going to bed.

The observation group adopted the optimized sleep care model. On the basis of routine care, combined with the characteristics of the patient's condition and sleep needs, systematic optimized care was implemented from four aspects: environment, body, psychology, and therapeutic intervention. The specific measures were as follows:

1.2.1 Environment Optimized Care

Create a comfortable and quiet sleeping environment, the temperature of the ward is 22-24℃, the relative humidity is 50% -60%, and the ventilation is twice a day for 30 minutes each time. Pay attention to keeping warm. Reduce the alarm volume of the equipment, handle the nursing operation with care, communicate softly, and use soft luminous lights for night rounds to avoid strong light. Organize the items in the ward, keep the bed unit clean, dry and flat, and adjust the height and position of the bed according to the needs of the patient to ensure comfortable sleep.

1.2.2 body comfort care

For physical discomfort affecting sleep problems, breathing difficulties follow the doctor's instructions to adjust the respirator parameters or oxygen inhalation, maintain more than 90% of SpO_2, and guide the appropriate body position; those who cough and cough before going to bed atomize to guide effective expectoration, clean the mouth, and use cough medicine if necessary; those who are in pain are administered after evaluation or relieved by physical methods; those who are bedridden for a long time regularly turn over and knock their backs to move their limbs to prevent pressure sores and relieve muscle fatigue [2].

1.2.3 psychological intervention nursing

Patients are critically ill and prone to negative emotions, which affect sleep. Nurses talk regularly every day, listen to their appeals, understand their psychological state and guide them. Explain the condition, treatment plans, etc., to relieve anxiety and fear; encourage expression of feelings, give understanding and comfort, and enhance confidence. Encourage family members to communicate via video, give emotional support, relieve loneliness, and improve

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mental state to facilitate sleep.

1.2.4 treatment and work and rest intervention

Arrange the operation time of treatment and nursing reasonably. Routine operations are concentrated during the day, and try not to operate at night. Inform in advance of necessary operations, and move gently and quickly. Guide to develop regular work and rest, sleep less during the day, avoid strenuous activities and stimulating programs 1 hour before going to bed, and do relaxation training to promote sleep. Severe sleep disorders should be prescribed by the doctor with sedative hypnotics, control the dose and time, and observe the curative effect and adverse reactions.

1.3 Observation indicators

Sleep quality, respiratory function indicators, complication rate and hospital stay were compared between the two groups before and after nursing. Sleep quality was assessed by Pittsburgh Sleep Quality Index (PSQI), including 7 dimensions, with a total score of 0-21 points, and the quality was poor when the score was high. 1 time before and after nursing; respiratory function indicators were detected for RR, SpO_2, $PaCO_2$; the occurrence of complications was recorded as the incidence rate; the length of hospitalization was recorded compared with the speed of recovery [3].

1.4 Statistical methods

The SPSS 22.0 statistical software was used to process the data, the measurement data was expressed as ($x \pm s$), and the t test was used for the comparison between groups; the counting data was expressed as rate (%), and the comparison between groups was used as the x^2 test. $P < 0.05$ indicates that the difference is statistically significant.

2. Results

2.1 Comparison of PSQI scores between the two groups before and after care

Before nursing, there was no significant difference in PSQI scores between the two groups ($P > 0.05$); after 2 weeks of nursing, the PSQI scores of the two groups were significantly reduced, and the PSQI scores of the observation group were significantly lower than those of the control group, and the difference was statistically significant ($P < 0.05$). The specific data are as follows: PSQI scores of the control group before nursing (15.3 ± 2.4) and after nursing (10.2 ± 2.1); PSQI scores of the observation group before nursing (15.5 ± 2.3) and after nursing (6.8 ± 1.9).

2.2 Comparison of respiratory function indexes between the two groups before and after nursing

Before nursing, there was no significant difference in RR, SpO_2 and $PaCO_2$ between the two groups ($P > 0.05$); after 2 weeks of nursing, the RR and $PaCO_2$ of the two groups were significantly reduced, and SpO_2 was significantly increased. The improvement of respiratory function indexes in the observation group was significantly better than that in the control group, and the difference was statistically significant ($P < 0.05$). The specific data are shown in the table below:

group	time	Respiratory rate (RR) (times per minute)	Arterial oxygen saturation (SpO_2) (%)	Arterial partial pressure of carbon dioxide ($PaCO_2$) (mmHg)
Control group (n = 43)	Before nursing	28.5 ± 3.6	86.3 ± 3.2	58.7 ± 4.5
	After care	23.2 ± 3.1	91.5 ± 2.8	52.3 ± 4.1
Observation group (n = 43)	Before nursing	28.7 ± 3.5	86.5 ± 3.1	59.1 ± 4.4
	After care	19.8 ± 2.7	95.2 ± 2.5	47.6 ± 3.8

2.3 Comparison of complication rates between the two groups of patients

During the nursing period, the incidence of complications in the observation group was significantly lower than that in the control group, and the difference was statistically significant (P < 0.05). The specific data are as follows: Among the 43 patients in the observation group, there was 1 case of lung infection and 1 case of pressure ulcer, and the complication rate was 4.7%; among the 43 patients in the control group, there were 4 cases of lung infection, 2 cases of pressure ulcer, and 2 cases of venous thrombosis, and the complication rate was 18.6%. All complications were detected in time and given targeted treatment and care, which did not lead to aggravation of the disease.

2.4 Comparison of hospital stay between the two groups

The hospitalization time of patients in the observation group was (14.2 ± 2.5) days, and that of patients

in the control group was (18.7 ± 3.1) days. The hospitalization time of patients in the observation group was significantly shorter than that of the control group, and the difference was statistically significant ($P < 0.05$), indicating that optimizing sleep care can speed up the recovery process of patients.

3. Discussions

Due to various factors such as critical condition, physical discomfort, frequent treatment operations, and high psychological pressure, critically ill patients in the Department of Respiratory Medicine generally have poor sleep quality, and sleep disorders will further aggravate the patient's condition and affect the recovery effect. The routine sleep care model lacks systematization and pertinence, and only focuses on basic environmental management and work and rest guidance. It is difficult to effectively solve various problems in the sleep process of patients, and the nursing effect is limited. The optimized sleep care model is patient-centered. Combined with the disease characteristics and sleep needs of critically ill patients in the Department of Respiratory Medicine, comprehensive and targeted nursing measures are implemented from four aspects: environment, body, psychology, and treatment intervention, effectively improving the sleep quality of patients and providing protection for patient recovery [4]. Environmental optimization nursing creates a comfortable and quiet sleeping environment for patients by controlling the temperature and humidity of the ward, reducing noise and strong light interference, and tidying the bed unit. It reduces the interference of external factors on the patient's sleep, and helps the patient fall asleep quickly and prolong the sleep time. Severe patients in the Department of Respiratory Medicine often have physical discomfort such as breathing difficulties, cough, and pain. These discomforts are one of the main causes of sleep disorders in patients. Physical comfort nursing addresses the patient's physical discomfort and implements targeted interventions, such as adjusting the way of respiratory support, relieving cough and pain symptoms, and preventing pressure ulcers, etc., to effectively reduce the patient's physical pain and improve the patient's sleep quality.

Psychological intervention nursing relieves patients' anxiety, fear, depression and other negative emotions by strengthening communication with patients, providing psychological counseling and emotional support, helping patients build confidence to overcome the disease, improve patients' psychological state, and reduce the impact of negative emotions on sleep. Treatment and work and rest intervention reduce the interference of treatment operations on patients' sleep, help patients establish normal sleep rhythms, and improve sleep quality by reasonably arranging treatment and nursing operation time, guiding patients to develop regular work and rest habits, and giving drugs to assist sleep when necessary.

The results of this study showed that the PSQI score of the observation group after nursing was significantly lower than that of the control group, the improvement of respiratory function indicators was significantly better than that of the control group, the complication rate was lower than that of the control group, and the hospitalization time was shorter than that of the control group, and the difference was statistically significant ($P < 0.05$). This result is consistent with the relevant research conclusions, indicating that the application effect of optimized sleep care in severe patients in respiratory medicine department is significant, which can effectively improve the sleep quality of patients, optimize respiratory function, reduce the incidence of complications, and accelerate the recovery process of patients [5].

It should be noted that the condition of critically ill patients in the Department of Respiratory Medicine is complex and changes rapidly. During the sleep care process, it is necessary to closely observe the changes of the patient's condition and sleep situation, and adjust the nursing measures according to the patient's condition to ensure the pertinence and effectiveness of the nursing measures. At the same time, nursing staff need to continuously improve their professional literacy and nursing skills, strengthen the learning of sleep care related knowledge, improve the quality of nursing services, and better meet the sleep needs of patients.

Conclusion

The high incidence of sleep disorders in severe patients in the Department of Respiratory Medicine seriously affects recovery and prognosis. Optimizing sleep care is the key to improving sleep and promoting recovery. Clinical observation of 86 patients in this study found

that the optimized sleep care model can effectively improve sleep quality, optimize respiratory function, reduce the incidence of complications, shorten hospital stay and speed up recovery more than conventional care. The model is patient-centered, implements all-round systematic intervention, and reflects the concept of humanization. In the future, it is necessary to further improve this model, adjust optimization measures in combination with practice, strengthen the training of nursing staff, and widely apply it in clinical practice to provide patients with high-quality care, improve prognosis, and promote the high-quality development of respiratory medical care.

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