

Original Article

Influence of a systematic nursing mode on the quality of life and pain of patients with chronic sinusitis and nasal polyps after endoscopic sinus surgery

Xiaoli Jin, Hongcun Sun, Wenbo Jiang

Department of Otolaryngology-Head and Neck Surgery, The People's Hospital of Ningbo University, Ningbo, Zhejiang Province, China

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Abstract: Objective: To explore the influence of a systematic nursing mode on the quality of life and pain of patients with chronic sinusitis and nasal polyps (CSNP) after endoscopic sinus surgery. Methods: In this prospective study, a total of 114 patients with CSNP who were admitted to our hospital were randomly divided into an observation group (n=57) and a control group (n=57) by a random number table. The control group was given routine nursing, and the observation group was given systemic nursing. In this study, we compared the two groups of patients with visual analogue scale (VAS) scores, self-rating anxiety scale (SAS) scores, the complication rate, quality of life, quality of sleep, and patients' satisfaction with nursing services. Results: The VAS scores of postoperative pain in the observation group were significantly lower than those in the control group ($P<0.001$). The SAS scores of patients in the observation group were markedly lower than those in the control group ($P<0.001$). The rate of complications such as periorbital bruising, nasal adhesions, and cerebrospinal fluid rhinorrhea was significantly lower in the observation group than that in the control group ($P<0.05$). The physical function, general health, social function, emotional role, and mental health of the observation group were markedly higher than those of the control group (all $P<0.05$). The sleep quality scores of patients in the observation group were significantly lower than those in the control group (all $P<0.05$). The observation group's satisfaction with systemic nursing was significantly higher than that of the control group ($P<0.05$). Conclusion: The systemic nursing model applied to patients undergoing nasal endoscopic surgery for CSNP showed remarkable results. It relieved patients' anxiety symptoms, reduced postoperative pain and the complication rate, improved patients' quality of sleep and life, increased patient satisfaction. The systemic nursing model was worthy of clinical promotion and application.

Keywords: Systematic nursing model, chronic sinusitis, nasal polyps, quality of life, pain

Introduction

Chronic sinusitis is a chronic purulent inflammation of the sinus mucosa, and repeated inflammation stimulates the formation of nasal polyps by edema of the sinus mucosa [1]. The etiology is complex and unknown, and is closely related to chronic infections, cold and nasal congestion, dietary causes, allergic reactions, personal hygiene, genetic factors, chronic inflammation, as well as seasonal and other factors [2-4]. Recently, the incidence of chronic sinusitis and nasal polyps (CSNP) has shown an obvious upward trend, with a prevalence of more than 15% [5]. In the early stage of the dis-

ease, there may be nasal congestion, olfactory disturbances, headaches and other minor clinical symptoms that are not easily noticed by patients. When the disease continues to develop, it can cause otitis media, loss of smell, vision changes and other diseases, and the recurrence rate is high, which affects the quality of life of patients [6]. Minimally invasive endoscopic sinus surgery is an effective treatment for chronic sinusitis nasal polyps, which can effectively remove the lesion, preserve the disease-free mucosa to the maximum extent, and promote the ventilation and drainage of the nasal cavity and sinuses. However, nasal cavity packing needs to be used after the oper-

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Table 1. Comparison of general baseline data between the two groups of patients (n, $\bar{x} \pm sd$)

Indexes	Observation group (n=57)	Control group (n=57)	χ^2/t	P
Age (years)	38.4±8.1	40.6±7.8	1.477	0.142
Course of disease (years)	3.6±2.1	3.5±1.9	0.267	0.790
Gender			0.140	0.708
Male	30	28		
Female	27	29		
Clinical classification [15]			0.147	0.929
Type I	10	9		
Type II	31	33		
Type III	16	15		
Comorbidity				
Hypertension	10	11	0.058	0.809
Coronary heart disease	7	9	0.290	0.589
Diabetes	5	7	0.372	0.541
Severity of illness [16]			0.324	0.955
Grade I	21	23		
Grade II	16	14		
Grade III	11	10		
Grade IV	9	10		

ation, which brings pain to the patient and leads to negative emotions such as anxiety, fear and loss of normality. These psychological stresses may increase the patient's perception of pain and affect the prognosis [7, 8]. Relieving or alleviating postoperative pain and anxiety, and promoting the quality of life and prognosis of patients have become the focus of postoperative care. Systemic nursing intervention refers to various positive nursing measures implemented in the nursing process. It is not limited to the monitoring of vital signs, but also emphasizes psychological counseling, sleep intervention and rehabilitation exercise guidance to improve the effectiveness of disease treatment and ultimately improve the quality of life [9]. At present, there are few reports at home and abroad about the impact of a systemic nursing mode on the quality of life and pain of patients with CSNP after endoscopic sinus surgery. Therefore, in this study, we mainly explored the effectiveness of the systemic nursing model in improving the quality of life and pain of patients with CSNP after endoscopic sinus surgery. We focused on analyzing the effects of this nursing intervention model on patients' anxiety and depression, sleep quality scores, complications and satis-

faction to provide a theoretical guidance for clinical care.

Materials and methods

General information

A total of 114 patients with CSNP hospitalized in The People's Hospital of Ningbo University from March 8, 2017 to June 19, 2019 and underwent endoscopic sinus surgery were selected as subjects. They were randomly divided into the observation group (n=57) and the control group (n=57). The general information of the two groups of patients was presented in **Table 1**. This study was approved by the Medical Ethics Committee of our hospital.

The included patients were patients with CSNP who underwent endoscopic sinus surgery [10]. They had normal cognitive func-

tion. All of the enrolled subjects agreed to participate in the study and signed informed consent.

Patients who were excluded: patients with a history of mental illness; patients with insufficiency of important organs; patients with cognitive impairment; and patients with malignant tumors.

Methods

The control group received routine nursing, which included preoperative nasal cavity cleaning, postoperative nasal cavity washing, postoperative diet advice, prevention of complications and other health education. The responsible nurse would give discharge guidance one day before discharge.

The observation group was given systemic nursing, included a number of specific measures. The first was preoperative nursing intervention after admission to the department. Medical staff explained the risk factors of CSNP, treatment methods, precautions and other disease-related knowledge to patients. They made full preparations before surgery, such as trimming the nose hair to control the internal inflammation of the patient's nasal

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cavity. They also introduced the advantages and precautions of minimally invasive nasal endoscopy to relieve the psychological pressure of patients. The second mode of care was intraoperative nursing intervention. Medical staff closely monitored changes in the patient's heart rate, blood pressure and other physical signs. The third point of care was postoperative nursing intervention. The medical staff instructed the patient's family to closely observe the bleeding, secretions of the surgical wound, and the patient's vision, and report any abnormalities to the physician. They instructed the patient to be in the correct position to facilitate the discharge of secretion. They also instructed the patient to follow the doctor's instructions, including nasal cleansing, anti-inflammatory treatment, etc., while patiently explaining to them the possible symptoms of surgery and coping strategies. The fourth point of care was psychological guidance. We formed a psychological consultation team consisting of attending physicians and nursing team leaders with professional skills, rich experience and strong communication skills. This team provided preoperative psychological guidance to patients to eliminate their fears and worries about the treatment. Since bilateral nasal congestion can cause uncomfortable experiences such as dizziness and nasal swelling, the team also provided postoperative psychological counseling to reassure patients that the pain was temporary to alleviate their anxiety. The fifth mode of care was dietary intervention. Medical staff guided patients to eat scientifically, avoid high-fat and spicy food, and avoid smoking and alcohol. The sixth was the discharge intervention. Medical staff instructed patients on the correct way to take care of their nasal cavity, and issued health education manuals related to CSNP to guide patients and their families to learn more about their condition, so as to avoid recurrence of the disease.

Outcome measures

After implementing systemic nursing, the intervention effects of the two groups were compared.

(1) Visual analogue scale (VAS) was used to compare the postoperative pain degree of the two groups of patients [11]. Patients were asked to draw a line according to their own

subjectivity on a straight line marked with 10 scales, with 0 being painless and 10 being severe pain.

(2) The Self-Rating Anxiety Scale (SAS) was used to assess the anxiety state of patients [12]. A SAS score ≥ 50 points indicated that there were anxiety symptoms, and its degree became more serious as the score increased.

(3) Medical Outcomes Study 36-Item Short-Form (MOS SF-36) was used to compare the quality of life of the two groups of patients. The scale included five dimensions of physical function, general health, social function, emotional role, and mental health. The full score of each dimension was 100 points. The higher the score, the higher the quality of life in the relevant dimensions was [13].

(4) We compared the occurrence of complications such as periorbital bruising, nasal adhesions, and cerebrospinal fluid rhinorrhea between the two groups. If multiple complications occurred in the same patient, the multiple complications were counted when calculating the total incidence, that was, the total incidence = the number of complications/total number of cases $\times 100\%$.

(5) The Pittsburgh Sleep Quality Index Rating Scale (PSQI) was used to compare the sleep quality of the two groups of patients. The higher the score, the worse the sleep quality was [14].

(6) When discharged from the hospital, patients were asked to fill in the self-made satisfaction survey scale of The People's Hospital of Ningbo University (the scale validity coefficient was 0.784, the reliability coefficient was 0.865) to evaluate nursing satisfaction. It was divided into satisfied (90-100 points), basically satisfied (60-89 points), dissatisfied (<60 points). Satisfaction = (satisfied + basic satisfaction) number of cases/total number of cases $\times 100\%$.

Statistical analysis

In this study, we used SPSS 20.0 for data statistics. Counting data were presented as (n/%), and the comparison was performed by χ^2 test. Measurement data conforming to a normal distribution were presented as the mean \pm standard deviation ($\bar{x} \pm sd$). The independent t test

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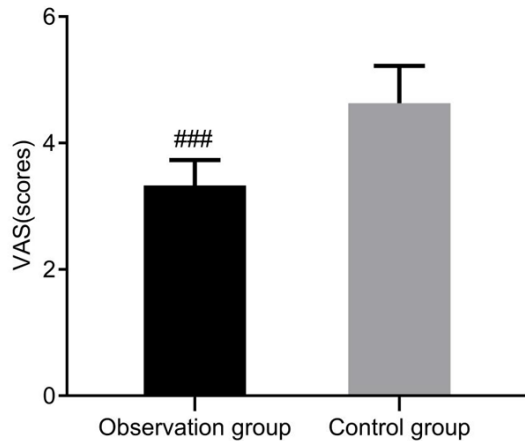


Figure 1. Comparison of VAS scores between the two groups. Compared with the control group, ### $P < 0.001$. VAS: visual analogue scale.

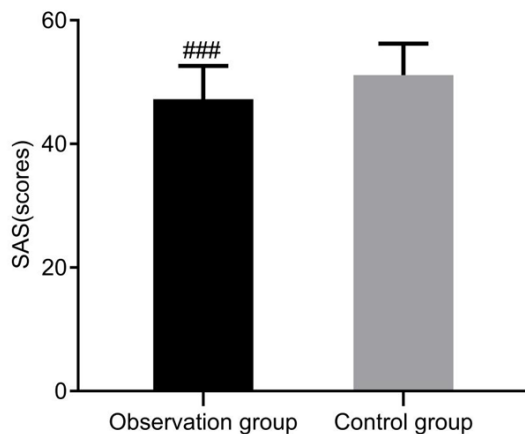


Figure 2. Comparison of SAS scores between the two groups. Compared with the control group, ### $P < 0.001$. SAS: self-rating anxiety scale.

was used for the comparison between groups, and the rank sum test was applied for the comparison of the composition of grade data between groups. $P < 0.05$ meant that the difference was markedly significant.

Results

Comparison of general baseline data between the two groups

There was no statistically significant difference in age, gender, clinical classification, comorbid diseases, and severity between the two groups of patients ($P > 0.05$), and as such the groups were comparable, as shown in **Table 1**.

Comparison of postoperative pain between the two groups

The postoperative pain score of the observation group (3.33 ± 0.40) was markedly lower than that of the control group (4.63 ± 0.59 , $t = 13.769$, $P < 0.001$), as shown in **Figure 1**.

Comparison of anxiety between the two groups

The SAS score of the observation group was significantly lower than that of the control group (47.17 ± 5.42 vs. 50.11 ± 5.07 , $t = 4.447$, $P < 0.001$), as shown in **Figure 2**.

Comparison of postoperative complications in the two groups

In the observation group, there were 2 cases of periorbital bruising, 0 cases of nasal adhesions, and 2 cases of cerebrospinal fluid rhinorrhea. The total complication rate was 7.02%. In the control group, there were 5 cases of periorbital bruising, 2 cases of nasal adhesions, 7 cases of cerebrospinal fluid rhinorrhea, and the total complication rate was 24.56%. The total incidence of complications in the observation group was markedly lower than that in the control group ($P < 0.05$), as shown in **Table 2**.

Comparison of the quality of life of the two groups of patients

Compared with the control group, the scores of physical function, general health, social function, emotional role, and mental health of the observation group were markedly higher than those of the control group (all $P < 0.01$), as shown in **Table 3**.

Comparison of sleep quality between the two groups

Compared with the control group, the PSQI score of the observation group was markedly lower than that of the control group ($t = 5.675$, $P < 0.001$), as shown in **Figure 3**.

Comparison of nursing satisfaction between the two groups of patients

In the observation group, 30 patients were satisfied with the nursing care during the hospitalization period, 24 patients were basically satisfied, 3 were dissatisfied, and the satisfaction rate was 94.74%. In the control group, 23

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Table 2. Postoperative complications of the two groups of patients (n, %)

Group	Periorbital bruising	Nasal adhesions	Cerebrospinal fluid rhinorrhea	Complication rate
Observation group (n=57)	2 (3.51)	0 (0.00)	2 (3.51)	4 (7.02)
Control group (n=57)	5 (8.77)	2 (3.51)	7 (12.28)	14 (24.56)
χ^2	1.371	2.040	3.022	6.601
P	0.242	0.154	0.082	0.010

Table 3. Comparison of quality of life score MOS SF-36 between the two groups (points, $\bar{x} \pm sd$)

Quality of life score	Observation group (n=57)	Control group (n=57)	t	P
Physical function	78.19±10.29	65.87±9.19	6.742	<0.001
General health	91.63±10.25	85.05±12.06	3.139	0.002
Social function	72.30±11.24	65.84±10.28	3.202	0.002
Emotional role	63.82±9.19	55.59±7.30	5.294	0.000
Mental health	68.50±10.18	57.46±7.04	6.734	<0.001

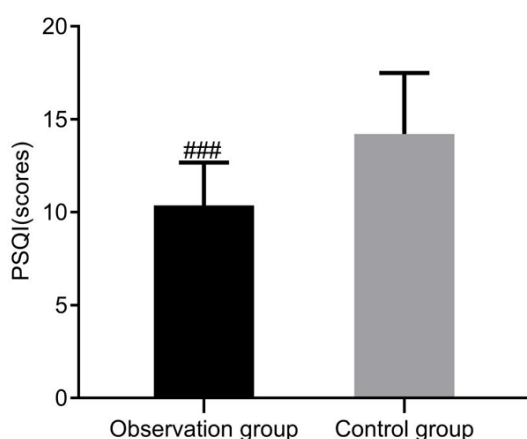


Figure 3. Comparison of PSQI scores between the two groups. Compared with the control group, ###P<0.001. PSQI: Pittsburgh sleep quality index rating scale.

patients were satisfied with the nursing care during hospitalization, 23 patients were basically satisfied, 11 were dissatisfied, and the satisfaction rate was 80.70%. The observation group's satisfaction with nursing care during hospitalization was significantly higher than that of the control group ($P<0.05$), as shown in **Table 4**.

Discussion

The main clinical treatments for chronic sinusitis nasal polyps include medical conservative therapy, traditional surgical therapy and mini-

mally invasive surgical therapy (endoscopic surgery). The treatment effect of the first two methods is poor, and the course of the disease is long, protracted, recurring, and it cannot achieve the expected therapeutic effect. Nasal endoscopic surgery can avoid enlargement of the sinus opening and some surgical tearing operations. Ensuring the elimination of inflammation, edema of the mucosa and polyp-like le-

sions, it can ensure nasal ventilation, a smooth mucosa, and structural integrity. It can also actively protect the normal mucosa and edematous mucosa that may have a benign outcome [17]. Nasal endoscopic surgery has many advantages such as less trauma area, a clearer surgical field and a higher recovery rate, but standardized postoperative care measures contribute greatly to patients' postoperative recovery and prevention of recurrence of the disease.

The system nursing model is a scientific and humanized modern nursing model. It contents are a series of nursing measures such as guiding patients to follow the doctor's prescription, continuing to care for the nasal cavity, improving self-care awareness, ensuring the efficacy of surgery and reducing complications. This nursing model connects the nursing process more closely, further optimizes nursing measures, and makes clinical nursing more comprehensive and systematic. At present, the whole-course systemic nursing model has been widely used in clinical nursing care of rectal cancer after Miles, cancer pain, thoracotomy, deep vein thrombosis, hemodialysis, esophageal cancer chemotherapy, etc., and has achieved good practical results [18-20].

Zhao Hongyan et al. took 78 patients with CSNP as their research subjects [21]. The control group was given basic nursing measures, and the experimental group was given system-

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Table 4. Comparison of nursing satisfaction between the two groups of patients (n, %)

Groups	Satisfied	Basically satisfied	Dissatisfied	Satisfaction rate
Observation group (n=57)	30 (52.63)	24 (42.11)	3 (5.26)	54 (94.74)
Control group (n=57)	23 (40.35)	23 (40.35)	11 (19.30)	46 (80.70)
χ^2				5.210
P				0.022

atic nursing based on the basic nursing. The results found that the VAS score of the experimental group was markedly lower than that of the control group. The study revealed that the systemic nursing model can effectively reduce the pain of patients. The experimental group of this study adopted the systemic nursing model and compared it with the conventional nursing model of the control group. We discovered that the postoperative VAS score was lower than that of the control group, indicating that the systemic nursing model can effectively relieve the pain of patients and facilitate postoperative recovery, which was consistent with previous research.

Anxiety was the most common and prominent psychological stress response of surgical patients. There was a very close relationship between anxiety and pain. The more severe the anxiety, the lower the pain threshold was. Wang et al. randomly divided 94 patients with advanced lung cancer with moderate to severe cancer pain into the observation group (47 cases) and in the control group (47 cases) [9]. The control group was given a conventional nursing mode, and the observation group was given systematic nursing intervention. The results showed that the SAS score of the observation group was markedly lower than that of the control group. The observation group in this study adopted a systematic nursing model and compared it with the conventional nursing model of the control group. Meanwhile, we discovered that the postoperative SAS score and the incidence of complications were lower than those of the control group, indicating that the systemic nursing model can reduce postoperative anxiety and the incidence of complications. This may be because pain relief reduces the anxiety of the patient, and at the same time reduces the incidence of adverse reactions such as periorbital congestion, nasal cavity adhesion, and cerebrospinal fluid rhinorrhea, which are all of positive significance for early recovery of patients.

The systematic nursing model was important to improve patients' quality of life. Tang et al. randomly divided 80 primary liver cancer surgery patients into an observation group and a control group, the control group was given routine postoperative care, and the observation group received systematic nursing measures [10]. The subjects' quality of life was assessed by the MOS SF-36 scale and they found that the physical function, general health, social function, emotional role, and psychological health scores were significantly higher in the observation group than those in the control group, suggesting that the patients' quality of life was higher, which was consistent with the current study. In addition, the sleep quality scores of the observation group were lower than those of the control group, indicating that the sleep quality of the observation group was better than that of the control group, once again proving the advantages of systematic nursing.

Finally, we also examined the satisfaction of the two groups of patients with their care during hospitalization in this study. We found that patients in the observation group were significantly more satisfied with their care than those in the control group, which may be attributed to the subjective experience of better care as the systematic nursing model reduced pain and anxiety, reduced complication rates, and improved clinical outcomes. However, in this study, we did not measure the post-discharge recurrence, nor was there a large sample of long-term nursing effect studies, which should be conducted to confirm the feasibility and importance of the systemic nursing model in patients after nasal endoscopy for CSNP.

In summary, the systemic nursing model was effective for patients with CSNP with endoscopic sinus surgery. It can relieve anxiety symptoms, reduce postoperative pain, decrease the complication rate, improve patients' quality of life and sleep quality, and increase

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patient satisfaction. It is therefore worth clinical promotion and application.

Disclosure of conflict of interest

None.

Address correspondence to: Xiaoli Jin, Department of Otolaryngology-Head and Neck Surgery, The People's Hospital of Ningbo University, No. 251 Baizhang East Road, Yinzhou District, Ningbo 315040, Zhejiang Province, China. Tel: +86-137-57409698; E-mail: jinxiaoli36nb@163.com

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