

## Original Article

# Application effects of targeted nursing model in patients undergoing thyroid surgery and its influence on patients' negative emotions

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**Abstract:** Objective: To explore the effectiveness of a targeted nursing model for patients undergoing thyroid surgery, and to analyse the influence of intervention on the negative emotions of patients. Methods: Eighty patients who received thyroid surgery in our hospital were enrolled and divided into a study group (n=40, given targeted nursing) and a control group (n=40, given routine surgical nursing) according to the difference of intervention measures. The postoperative bed-leaving time, hospitalization time, medical expenses, drainage tube indwelling time and incidence of postoperative adverse reactions were compared between the two groups. The degree of pain, anxiety and depression was compared between the two groups at 1 d, 3 d, 5 d, and 7 d after surgery. The scales of voice handicap index (VHI-10) and standard swallowing assessment (SSA) were used to evaluate voice quality and swallowing function in the two groups. Results: The postoperative bed-leaving time, hospitalization time, medical expenses, drainage tube indwelling time and incidence of postoperative adverse reactions of patients in the study group were lower than those in the control group ( $P<0.05$ ). The scores of visual analogue scale (VAS), self-rating anxiety scale (SAS) and self-rating depression scale (SDS) in the study group at 3 d, 5 d and 7 d after surgery were lower than those in the control group ( $P<0.05$ ). The scores of VHI-10 and SSA in the study group were lower than those in the control group at 7 d and 30 d after surgery ( $P<0.05$ ). Conclusion: Targeted nursing for patients undergoing thyroid surgery can help accelerate the improvement of postoperative clinical symptoms, relieve the unhealthy emotions and pain of patients, and help improve their voice quality and swallowing function, which also has a positive effect on reducing postoperative complications. Therefore, it is worthy of clinical popularization and application.

**Keywords:** Thyroid surgery, targeted nursing model, application effects, negative emotions, influence

## Introduction

The thyroid gland is the largest endocrine organ in the human body, which is located on both sides of the trachea below the thyroid cartilage [1]. The thyroid gland plays an important role in controlling the rate of energy consumption, regulating the body's sensitivity to various hormones, and production of protein. It also has the functions of regulating metabolism, growth rate, and calcium balance [2, 3]. Thyroid disease is common and frequently-occurring in

clinical practice, which is caused by a combination of multiple factors, and data shows that there are about 300 million patients with thyroid diseases worldwide [4]. It is the second most common endocrine disease after diabetes mellitus. Some surveys indicate that there are at least 40 million patients with hypothyroidism and 10 million patients with hyperthyroidism in China, and the number is increasing annually [5, 6]. The etiology of thyroid diseases is complex, and factors such as genetic, immune, and dietary changes may increase the

incidence of the disease. It has been found in clinical practice that a small number of patients with benign thyroid disease have no obvious clinical symptoms and little interference in their normal life, but most patients with thyroid diseases have a tendency to have oppressive or malignant transformation. It is clinically recommended to seek medical treatment as soon as possible and take active treatment measures [7-9].

Surgical operation is an important method for the treatment of thyroid diseases, which is of positive significance in alleviating patient's conditions and improving their prognosis. Good nursing care is the basis of reducing the incidence of postoperative complications and accelerating the recovery of patients. However, there are some deficiencies in perioperative nursing care for patients with thyroid diseases, such as strong passivity and weak pertinence, so it is urgent to seek a more effective and reasonable nursing intervention [10, 11]. Based on humanistic concepts, the targeted nursing model emphasizes patient-centeredness and advocates more elaborate interventions. In fact, the targeted nursing model has been widely used in clinical practice. A retrospective study of 80 patients with thyroid cancer showed that a targeted nursing model can help improve the prognosis of patients after surgery and reduce the incidence of complications, which has a positive effect on the quality of life of patients [12]. Another study has shown that a targeted nursing model can shorten the postoperative hospital stay and reduce the treatment costs of patients [13]. This study aimed to explore the feasibility of our targeted nursing model for patients undergoing thyroid surgery, so as to provide clinical evidence for improving the postoperative prognosis of thyroid patients.

### Materials and methods

#### *General information*

Eighty patients undergoing thyroid surgery in our hospital were enrolled and divided into a study group (n=40, given targeted nursing) and a control group (n=40, given routine surgical nursing care).

Inclusion criteria: (1) Patients diagnosed with thyroid diseases (hyperthyroidism, hypothyroidism, thyroid nodules, thyroid cancer in stage

I-II) undergoing surgical treatment; (2) Those with clear consciousness and were able to cooperate in the investigation; (3) Those with complete medical records; (4) This study was performed with the approval of Donghu Branch of The Second Affiliated Hospital of Hainan Medical University Ethics Society; (5) All patients or their family members voluntarily signed the informed consent.

Exclusion criteria: (1) Patients combined with mental illness; (2) Pregnant or lactating women; (3) Those combined with severe hepatic and renal dysfunction; (4) Those combined with other severe organ diseases such as coronary heart disease and renal failure; (5) Those with poor treatment compliance.

Elimination criteria: (1) Death cases during the survey; (2) Voluntary withdrawal during the survey.

#### *Interventional methods*

The patients in the control group received routine perioperative nursing care for thyroid diseases, including preoperative health education, dietary intervention, close observation of the conditions, and appropriate functional exercises.

The patients in the study group received targeted nursing care in addition to the care given to the control group. The specific measures are as follows: (1) Positive preoperative psychological counselling. Most patients feel panic and fear when facing surgery. According to the patient's condition, nursing staff conduct targeted psychological guidance before surgery, such as health education to enable patients to fully understand their own condition, and psychological assessment and relaxation training to alleviate the unhealthy emotions of patients, which is helpful for surgery. (2) Other preoperative guidance, including dietary adjustment, posture guidance, and preparation of the surgical area. (3) Intraoperative nursing care. Excessive fluid input during the surgery needs to be avoided to prevent gastrointestinal symptoms. At the same time, the posture of patients is directed during the surgery. For example, a soft cushion is placed under the patient's shoulder to ensure full stretch of the patient's neck and intraoperative field of vision. In addition, the operating room is kept warm. In

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the case of air circulation, the temperature of the operating room is kept stable. The exposed parts of the patient are covered with blankets, and if needed an inflatable heating apparatus is used. (4) Postoperative nursing care. As an important part of perioperative nursing care, postoperative nursing care includes general nursing care, guidance on living, pain care, voice training, etc. General nursing mainly refers to the close monitoring of vital signs and drainage tube nursing. Guidance on living care nursing is mainly to provide patients with appropriate food and drinking water. Pain care refers to postoperative analgesia measures (such as appropriate injection of analgesic drugs, diverting the patient's attention, etc.). Voice training refers to muscle relaxation, breathing training, resonance exercises, etc., with the purpose of promoting the recovery of patients' voice and swallowing function.

### *Outcome measurement and evaluating standards*

*Comparison of differences in general surgical indices between the two groups:* Postoperative bed-leaving time, hospitalization time, medical expenses and drainage tube indwelling time of patients in both groups were statistically counted and compared.

*Dynamic analysis of degree of postoperative pain in the two groups:* Assessment of postoperative pain was carried out in the two groups at four time points: 1 d, 3 d, 5 d, and 7 d after surgery. The evaluating tool is the visual analogue scale (VAS) scale, which uses a 0-10 cm ruler. "0" means no pain, "10" means severe pain. Each subject chooses a certain point on the scale to represent his/her degree of pain. This tool is relatively simple and applicable [14].

*Comparison of the assessment of unhealthy emotions between the two groups:* Self-rating anxiety scale (SAS) and self-rating depression scale (SDS) scales were used to evaluate the unhealthy emotions of patients at four time points: 1 d, 3 d, 5 d, and 7 d after surgery. The SAS scale is commonly used for assessment of anxiety in clinical practice, which can reflect the severity of subjects' anxiety symptoms. It includes 20 items, each of which is scored on a four-point scale. A total score of 20 items below 50 points means no anxiety, 50-59 means mild anxiety, 60-69 means moderate anxiety, and 70 or above means severe anxiety

[15]. The SDS scale includes 20 items, each of which is scored on a four-point scale. The total score of 20 items divided by 80 equals the depression severity index. An index below 0.5 means no depression, 0.5-0.59 means mild depression, 0.6-0.69 means moderate depression, and 0.7 or above means severe depression [16].

*Evaluation of voice quality and swallowing function in the two groups:* Voice quality and swallowing function were evaluated at 3 time points: 1 d, 7 d and 30 d after surgery. The voice handicap index (VHI-10) scale was used for evaluation of voice quality, which included 10 questions. The score of each question is from 0 to 4 points, and the highest score is 40 points. A higher score means a more serious voice handicap [17]. The standard swallowing assessment (SSA) scale includes three parts, which can be used to evaluate pharyngeal reflex, spontaneous cough, and laryngeal function. The lowest score of the SSA scale is 18 points, and the highest score is 46 points. A higher score means more serious subjective dysphagia [18].

*Comparison of the incidence of postoperative adverse reactions between the two groups:* The incidence of various adverse reactions such as hoarseness, hypocalcemic tetany, and skin ecchymosis during the observation period from the end of the operation to discharge was counted by a nurse, and the differences between the groups were compared.

### *Statistical analysis*

SPSS 20.0 statistical software was used to process the data. The measurement data were expressed as ( $\bar{x} \pm SD$ ). The difference between groups was compared by the student's t test. The count data were expressed as n (%). Chi-squared test was used to compare count data between groups. Student's T test was also used to compare the difference of continuous variables between groups.  $P < 0.05$  was considered statistically significant.

## **Results**

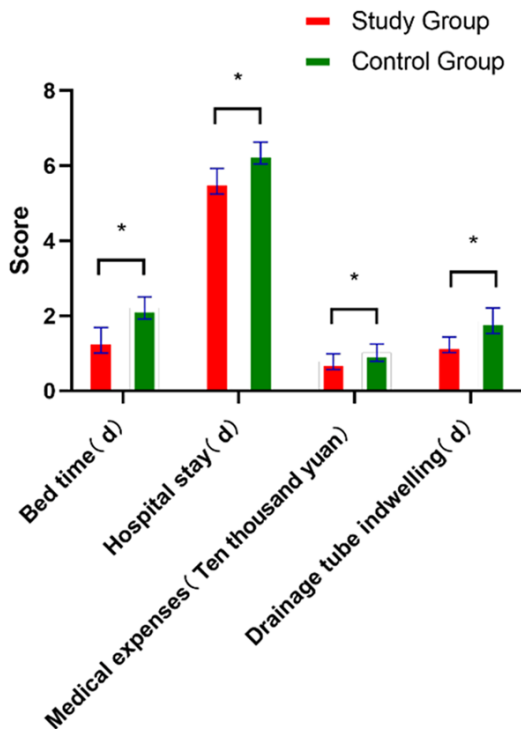
### *Comparison of differences in general clinical data between the two groups*

There was no statistically significant difference in general clinical data such as gender, history

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**Table 1.** Comparison of differences in general data between the two groups ( $\bar{x} \pm s$ )/[n/(%)]

General data		Study group (n=40)	Control group (n=40)	t/ $\chi^2$	P
Gender	Male	26	23	0.474	0.491
	Female	14	17		
Average age (year)		44.98±4.49	45.01±4.28	0.031	0.975
Educational level	Illiteracy	3	4	0.445	0.545
	Primary school	4	5		
	Junior high school	10	11		
	Senior high school or above	23	20		
Marital status	Married	34	35	0.105	0.745
	Single	6	5		
Disease type	Hyperthyroidism	4	3	0.556	0.411
	Hypothyroidism	5	4		
	Thyroid nodules	20	23		
	Thyroid cancer	11	10		
History of hypertension	Yes	3	4	0.157	0.692
	No	37	36		
History of diabetes mellitus	Yes	6	5	0.105	0.745
	No	34	35		



**Figure 1.** Comparison of differences in general surgical indices between the two groups. Postoperative bed-leaving time, hospitalization time, medical expenses and drainage tube indwelling time in the study group were statistically lower than those in the control group ( $P < 0.05$ ). \* indicates that the difference between the two groups is statistically significant.

of disease, disease type, marital status, educational level, etc. between the two groups (Table 1).

### Comparison of differences in general surgical indices between the two groups

Postoperative bed-leaving time, hospitalization time, medical expenses and drainage tube indwelling time in the study group were statistically lower than those in the control group ( $P < 0.05$ ) (Figure 1).

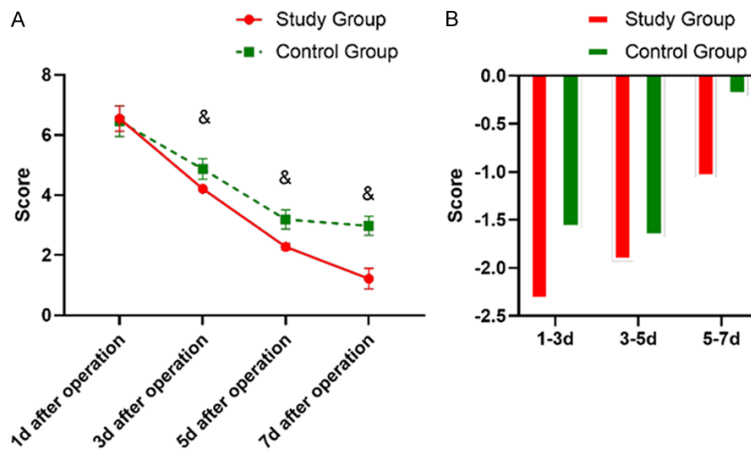
### Dynamic analysis of degree of postoperative pain in the two groups

The VAS scores in the study group at 3 d, 5 d, and 7 d after surgery were significantly lower than those in the control group at the respective time points. The difference between the two groups was statistically significant. In the study group, the VAS scores at 5 d and 7 d after surgery were significantly lower than those at 1 d and 3 d after surgery ( $P < 0.05$ ) (Figure 2).

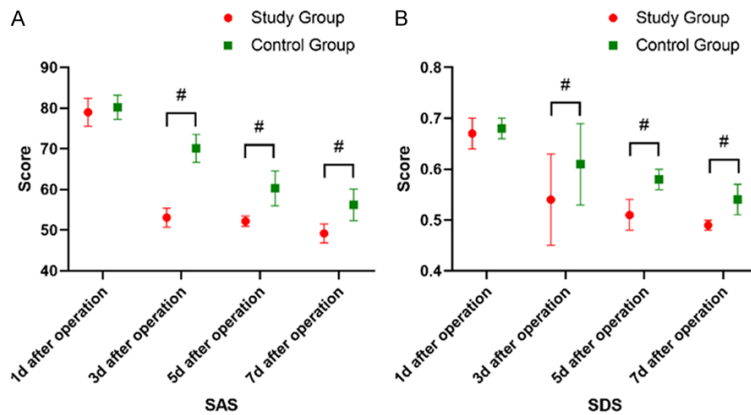
### Comparison of assessment of postoperative unhealthy emotions between the two groups

There was no significant difference in the scores of SAS and SDS at 1 d after surgery between the two groups ( $P > 0.05$ ). The scores of SAS and SDS in the study group at 3 d, 5 d

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**Figure 2.** Dynamic analysis of degree of postoperative pain in the two groups. The VAS scores in the study group at 3 d, 5 d, and 7 d after surgery were significantly lower than those in the control group. The difference between the two groups was statistically significant (A) ( $P < 0.05$ ). The comparison of decline of 1 d-3 d after surgery, 3 d-5 d after surgery, and 5 d-7 d after surgery showed that the VAS score in the study group decreased much more than that in the control group (B). & indicates that the difference between the two groups is statistically significant.



**Figure 3.** Comparison of assessment on postoperative unhealthy emotions between the two groups. There was no significant difference in the scores of SAS at 1 d after surgery between the two groups ( $P > 0.05$ ). The scores of SAS in the study group at 3 d, 5 d and 7 d after surgery were significantly lower than those in the control group ( $P < 0.05$ ) (A). There was no significant difference in the scores of SDS at 1 d after surgery between the two groups ( $P > 0.05$ ). The scores of SDS in the study group at 3 d, 5 d and 7 d after surgery were significantly lower than those in the control group ( $P < 0.05$ ) (B). # indicates that the difference between the two groups is statistically significant.

and 7 d after surgery were significantly lower than those in the control group ( $P < 0.05$ ) (Figure 3).

### Evaluation of voice quality and swallowing function in the two groups

There was no significant difference in the scores of VHI-10 and SSA at 1 d after surgery

between the two groups ( $P > 0.05$ ). The scores of VHI-10 and SSA in the study group at 7 d and 30 d after surgery were significantly lower than those in the control group ( $P < 0.05$ ) (Figure 4).

### Comparison of the incidence of postoperative adverse reactions between the two groups

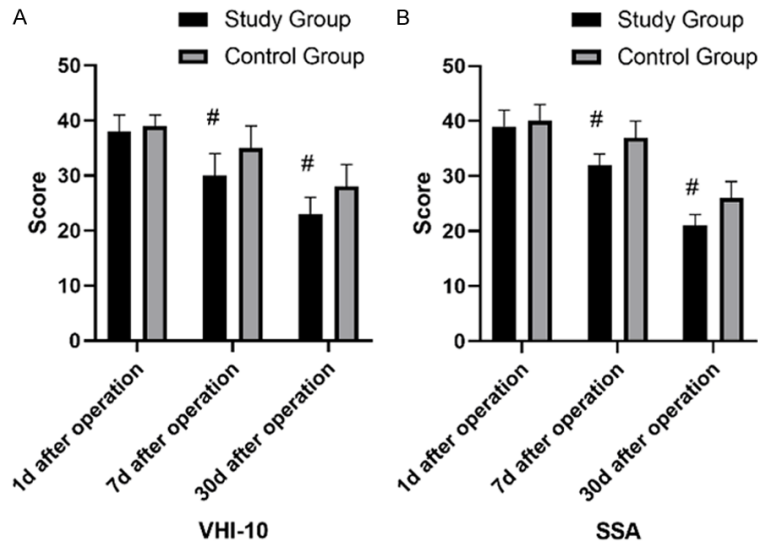
During the observation period, there was 1 patient with hoarseness and 1 patient with skin ecchymosis in the study group, and there were 4 patients with hoarseness, 1 patient with hypocalcemic tetany, and 4 patients with skin ecchymosis in the control group. The incidence of adverse reactions in the study group was 5.00%, lower than that of 22.50% in the control group ( $P < 0.05$ ) (Table 2).

## Discussion

As an important gland in the human body, thyroid gland has many physiological functions, such as regulating energy metabolism, intervening in protein synthesis, and controlling body growth. In addition, the hormones secreted by the thyroid gland are widely involved in the pathological process of osteoporosis and heart disease, suggesting that thyroid gland plays an important role in maintaining the normal functioning of the body. Thyroid disease is a broad term, which refers to diseases such as thyroid cancer,

hypothyroidism, hyperthyroidism, thyroid nodules, etc. Thyroid disease is a common disease with high morbidity in clinical practice. According to the research data of the Endocrine Society of the Chinese Medical Association, thyroid disease is the second most common endocrine disease after diabetes mellitus. The total number of cases of thyroid disease worldwide has exceeded 300 million, which has

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**Figure 4.** Evaluation of voice quality and swallowing function in the two groups. The scores of VHI-10 at 7 d and 30 d after surgery in the study group were significantly lower than those in the control group ( $P<0.05$ ) (A). The scores of SSA at 7 d and 30 d after surgery in the study group were significantly lower than those in the control group ( $P<0.05$ ) (B). # indicates that the difference between the two groups is statistically significant.

**Table 2.** Comparison of the incidence of postoperative adverse reactions between the two groups [n (%)]

Groups	Case	Hoarseness	Hypocalcemic tetany	Skin ecchymosis	Total incidence
Study group	40	1 (2.50)	0 (0.00)	1 (2.50)	2 (5.00)
Control group	40	4 (10.00)	1 (2.50)	4 (10.00)	9 (22.50)
$\chi^2$	-	-	-	-	5.165
$P$	-	-	-	-	0.023

become a public health problem affecting the life and health of residents around the world [19].

Surgery has always been a common method in the clinical treatment of thyroid diseases. Due to the long treatment period, high cost, and obvious side effects of drug treatment, some patients with thyroid disease are clinically recommended to undergo surgical treatments as soon as possible to relieve the clinical symptoms of patients and improve their prognosis. However, it has been found that patients with thyroid disease undergoing surgical treatments will have an obvious stress response and high incidence of postoperative complications, which will affect their prognosis to a certain extent. Data shows that about 23.22% of patients undergoing thyroid surgery will experi-

ence postoperative complications such as hoarseness and dysphagia, resulting in a decrease of their quality of life [20]. Studies have pointed out that about 30% of patients have severe postoperative ecchymosis, and patients complain of psychological stress and obvious anxiety. All these put forward higher requirements for the nursing care of patients undergoing thyroid surgery [21].

The targeted nursing model has been developed in recent years. Based on evidence-based nursing, this model is an intervention method with personalized characteristics. At present, the targeted nursing model has been popularized in a variety of clinical operations.

This study explored the feasibility and effectiveness of a targeted nursing model for patients undergoing thyroid surgery by setting up different groups. The results showed that postoperative ambulation time, hospitalization time, medical expenses and drain-

age tube indwelling time in the study group were significantly lower than those in the control group, suggesting that the targeted nursing model can help accelerate the postoperative rehabilitation of patients. A clinical survey of 100 patients with gastric cancer showed that after the targeted nursing care, the postoperative pain and the incidence of complications were significantly reduced, and the hospitalization time was shortened. A retrospective study of patients with thyroid cancer has indicated that the targeted nursing model is helpful to reduce the medical expenses of patients and optimize the allocation of medical resources, and the result of long-term follow-up showed that the quality of life of patients after intervention was also improved [22]. A retrospective research on patients with thyroid cancer has pointed out that there is a positive significance

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for the development of postoperative clinical indices of patients with targeted nursing, and the postoperative recovery of incisions is often better [23]. Because of the difficulty of the operation and the special surgical site, postoperative recovery may be affected by multiple factors. Routine nursing care focuses on surgical indices and often lacks personalized care for patients. The targeted nursing model is an intervention method with individual characteristics formed on the basis of evidence-based nursing. At present, the targeted nursing model has been promoted in various types of clinical surgeries and achieved good practical results, and since it is more directional, the postoperative recovery is quicker. The results of this study showed that degree of postoperative pain of the patients in the study group at 3 d, 5 d and 7 d after surgery were significantly lower than those in the control group, suggesting that a targeted nursing model helps alleviate postoperative pain symptoms. Some scholars have conducted statistical studies on postoperative adverse reactions of patients with thyroid cancer, and the results have confirmed that pain is a common complication after thyroid surgery, and excessive pain can even affect the patient's psychological state and induce a severe stress response; therefore, active pain intervention is recommended for patients with thyroid surgery [24]. Measures of pain intervention such as the application of analgesics and analgesic pumps and diversion of patient's attention in this study can relieve the pain symptoms and effectively improve the patient's stress response, laying the foundation for a good prognosis.

The comparison results of postoperative unhealthy emotions showed that the scores of SAS and SDS in the study group declined significantly after intervention, and were much lower than those in the control group. A survey of patients with thyroid cancer pointed out that their anxiety and depression were obvious due to postoperative pain and stress, and the scores of SAS and SDS were significantly higher than normal. However, the unhealthy emotions of patients were relieved after appropriate psychological intervention. Targeted care is helpful for the patients' recovery [25]. In this study, the patients in the study group had better feeling emotions than those in the control group. The reason may be related to the

targeted psychological intervention and guidance conducted by the nursing staff before surgery. At the same time, health education also relieved the patients' fear of unknown condition to a certain extent. Patients can be calm in the face of surgery with emotional guidance and can better face postoperative changes of physical function. The comparison of postoperative voice quality and swallowing function between the two groups suggested that a targeted nursing model can help improve the symptoms of postoperative hoarseness and dysphagia. Clinical studies have shown that voice handicaps often occurs in thyroid patients after surgery due to vocal cord edema, laryngeal inflammation, tissue fibrosis, etc. The targeted nursing model can enhance patient's laryngeal muscle endurance through training, balance the generation of patient's voice, and promote the relaxation and adaptation of laryngeal muscles to improve their voice quality and swallowing function after surgery. The comparison of complications between the two groups suggests that a targeted nursing model can significantly reduce postoperative complications. A survey of 100 patients with thyroid cancer showed that the incidence of postoperative complications reduced from 21.00% to 9.00% after targeted nursing care, which was similar to the results of this study [26]. The reason may be related to the fact that a targeted nursing model can accelerate the improvement of patients' clinical symptoms and relieve postoperative pain.

In summary, the targeted nursing model for patients undergoing thyroid surgery can help accelerate the improvement of postoperative clinical symptoms, relieve unhealthy emotions and pain, improve voice quality and swallowing function, and reduce postoperative complications; which all have a positive effect and this treatment therefore is worthy of clinical popularization and application.

The innovation of this study is that by conducting a controlled study, the effectiveness and feasibility of targeted nursing on patients undergoing thyroid surgery were demonstrated in detail from the aspects of general indicators, postoperative pain, unhealthy emotions, swallowing function and incidence of adverse reactions. The detailed data provided support for a follow-up study. This study has two limitations.

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On the one hand, there are only a few samples, leading to a lack of comprehensive results; on the other hand, there is no analysis of effect of targeted nursing model on the prognostics. A more comprehensive study with a larger sample size and longer follow-up is required in the future, thus providing a theoretical basis for improving the prognosis of patients with thyroid disease.

### Disclosure of conflict of interest

None.

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