# Original Article High-quality nursing reduces the incidence of postoperative pain and complications, and enhances the quality of life and nursing satisfaction

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**Abstract:** Objective: This study aimed to investigate the application effect of high-quality nursing on patients, their adverse emotion and reduction on the incidence of postoperative pain and complications, in patients with thyroidectomy. Methods: In total, 192 patients with thyroidectomy were randomly divided into an intervention group (N=96) and a control group (N=96). The control group was treated with routine nursing, while the intervention group was additionally offered high-quality nursing intervention. The self-rating anxiety scale (SAS) and the self-rating depression scale (SDS) were adopted to assess the emotional status; the pain degree of the two groups was evaluated by visual analogue scale (VAS); the complication incidence was compared between the two groups; the quality of life of the two groups was evaluated with reference to the quality of life questionnaire (QLQ-C30). Results: After nursing, the SAS score, SDS and VAS scores of the intervention group was higher than that of the control group (P<0.001). The nursing satisfaction score of the intervention group was higher than that of the control group (P<0.001). After nursing, the QLQ-C30 of intervention group, the disease control, life behavior, exercise, and psychological emotional change scores were higher than those of the control group (P<0.001). Conclusion: High-quality nursing is effective in treating patients with thyroidectomy. It can improve the patient's adverse emotions, reduce the incidence of postoperative pain and complications, and enhance the quality of life and nursing satisfaction.

Keywords: Thyroid disease, high-quality nursing, surgery, nursing

#### Introduction

The thyroid gland is an important endocrine organ of human body. The secreted thyroid hormones can promote the growth and metabolism of the body, and enhance the central excitation [1]. In recent years, the incidence of thyroid disease has been increasing, but the reason for its sharp increase is still unclear. Compared with men, the incidence rate in women is higher [2]. Thyroid diseases include thyroid tumors, thyroid nodules, and primary hyperthyroidism, etc. Clinical resection is a common treatment method for this disease [3]. The thyroid gland is located between the nerve and the organ. Its structure and surgical resection are quite complicated. The operation is traumatic. Therefore, many patients with thyroid disease are nervousness and have fear about the operation, which may cause a series of stress reactions and increase the incidence of postoperative complications. The treatment effects will be ultimately affected [4]. As a result, among patients with thyroid disease, strengthening the clinical nursing for surgical resection is essential for the smooth implementation of surgery and the promotion of good prognosis [5].

With the development of the economy and the improvement of people's living standards, people's demand for medical care and services is also increasing. The routine nursing intervention model has had difficulty in meeting the needs of most patients [6]. So the high-quality care model was born. It is a kind of people-oriented nursing intervention, with the characteristics of professional knowledge, continuity, concentration, coordination, partnership, individuation, harmony and care. In order to pro-

mote the patient's best recovery, full consideration and careful nursing are given to the patient based on personal needs [7]. In the past, there were many studies on the application of high-quality nursing in clinical practice. For example, in the study of Lin et al. [5], highquality nursing can dramatically improve the anxiety and depression of patients with acute stroke during MRI examination. It also delivers a good application evaluation in improving the examination completion rate, shortening the examination time, and enhancing nursing satisfaction. In the report of Widdifield et al. [8], by providing high-quality care for elderly patients with rheumatoid arthritis, the proportion of patients receiving antirheumatic drugs increased markedly. However, there are few studies on the application of high-quality nursing in the operation of patients with thyroid diseases.

This study explores the effect of high-quality nursing on the patients with thyroidectomy. It aims to provide a viable clinical nursing intervention model for patients with thyroidectomy.

### Materials and methods

## General information

From March 2014 to April 2017, a total of 192 patients with thyroidectomy were selected as study subjects. They were randomly divided into an intervention group and a control group, with 96 cases in each group. There were 53 males and 43 females in the intervention group. The age was 27-71 years old, with an average age of  $(52.3\pm6.8)$  years. There were 51 males and 45 females in the control group. The age was 32-72 years, with an average age of  $(51.4\pm6.5)$  years. The study was approved by the ethics committee of the First People's Hospital of Jingzhou. The subjects and their guardians were well informed and signed a full informed consent.

# Inclusion and exclusion criteria

Inclusion criteria: patients with thyroid disease diagnosed by imaging B-ultrasound, X-ray, and postoperative pathological examination [9]; patients without distant metastasis; patients eligible for surgical resection; patients with tumor or nodule ≤6 cm; grade I-II of American Society of Anesthesiologists (ASA) [10]; patients with normal lymph node shape and thyroid function. Exclusion criteria: overweight (BMI≥28 kg/m<sup>2</sup>); patients with combined severe liver and kidney dysfunction, hematological systemic diseases, hematological infectious diseases, severe organ diseases, coagulopathy, and systemic autoimmune disease; patients who were transferred or died in the middle of the study; mentally disordered patients, and patients unable to communicate.

# Nursing method

The control group was treated with routine nursing. Patient's clinical data was collected and archived. Dietary guidance was implemented. Breathing mode and surgical position guidance were performed. The patient's skin was routinely shaved before surgery. Fasting began 12 hours before surgery. Patient's vital signs were monitored closely.

The intervention group was treated with highquality nursing intervention in addition to the routine care. Patient's condition was carefully observed to understand the patient's family, social and cultural status. Psychological assessment was conducted. According to the patient's situation, a high-quality nursing plan was developed and a responsibility system was implemented. The rights and responsibilities were clearly defined to ensure the smooth implementation of each care step. Preoperative care: disease-related knowledge, such as thyroid disease types, surgical plans, precautions and prevention was explained to patients and their families. The surgical cooperation key points were mastered by patients. Patient's psychological state was evaluated. For patients with fear and anxiety, targeted psychological nursing intervention was implemented. Communication with patients and family members was actively carried out. Questions from patients and family members were patiently answered to improve cognitive competence. In order to eliminate the patient's adverse emotions and establish good therapeutic self-confidence, successful surgery cases were told to the patients. A harmonious relationship between nurses and patients was established to reduce nurse-patient disputes. High-calorie and high-protein foods were fed to patients 3 weeks before surgery. Proper amount of fruits and vegetables were also eaten. Spicy foods are prohibited. Preoperative examination and preparation were conducted. Intraoperative care: the patient was assisted to ad-

# The effect of high-quality nursing

just into a comfortable position. The height of the pillow was adjusted according to patient's cervical spine condition and body shape. Sterile treatment towels were put on both sides of the neck. The operating room temperature was 20°C-25°C. Patients cooperate with the doctor to do the nursing work. Patient's vital signs were closely monitored. Any problems are reported to the doctor immediately. Postoperative care: when the patient is not awake, the pillow is removed to ensure that the breathing is smooth. After recovery from anesthesia, the patient is assisted to take a semi-recumbent rest. Neck activity is limited and flow oxygen uptake is performed. Patient's vital signs are closely monitored. Liquid diet is given 6 hours after surgery. Two days after surgery, a full diet can be consumed. Complications after surgery are actively prevented. Patients are asked if there is any nausea, vomiting, dizziness and headache. Drainage is closely observed. If there is increased drainage, difficulty breathing and neck swelling, active bleeding should be considered. Timely hemostasis should be carried out. According to the patient's perception of wound pain, they will be instructed to distract their attention, such as listening to music, watching TV, etc. If there is severe pain, the analgesic drug will be given. The precautions after surgery will be told to patients. Medicine will be taken according to the doctor's advice. Discharge instruction: patients will have enough rest after discharge. Overwork and emotional excitement will be avoided. Patients will be instructed to develop healthy eating habits. High-protein, low-fat, and light foods are recommended. Irritating and hot food is not recommended. If any discomfort occurs, patient should go to see a doctor immediately. A regular reexamination is required for the patients every month. The nursing deadline is October 2017.

#### Outcome measures

The anxiety and depression status were assessed using the self-rating anxiety scale (SAS) [11] and the self-rating depression scale (SDS) [12]. There were 20 items in SAS and SDS. They were used to assess the subjective feelings of patients. They were divided into 1-4 points and 4 levels. 1 point: rare depression or anxiety; 2 points: anxiety or depression part of the time; 3 points: anxiety or depression for a considerable amount of time; 4 points: anxiety or depression most or all time. The higher the score is, the more serious the patient's anxiety and depression are. The SAS threshold is 50 points, and the SDS threshold is 53 points.

The pain degree was assessed by visual analog scale (VAS) [13] 1 day after surgery. No points on VAS score: no pain; 10 points of VAS score: the most severe pain. The higher the VAS score is, the more severe the pain is. The complication incidence, such as respiratory convulsions, laryngeal edema, wound infection and bleeding were observed.

A home-made nursing satisfaction questionnaire was used to evaluate the satisfaction degree 1 day before discharge, including attitude, personality, wearing, and operational proficiency. There were 20 questions in total, with 5 points for each question and a maximum score of 100 points. The higher the score is, the better the patient's nursing satisfaction will be.

The quality of life of the two groups was evaluated with reference to the quality of life questionnaire (QLQ-C30) [14] 6 months after discharge, including disease control, life behavior, exercise, and psychological and emotional changes. The score for each item is 100 points. The higher the score is, the better the patient's quality of life is.

# Statistical method

Statistical analysis was performed using SPSS 17.0 (Beijing Strong-vinda Information Technology Co., Ltd., China). The enumeration data was indicated by case number/percentages [n (%)]. Chi-square test was used to compare the enumeration data between groups. When the theoretical frequency in the Chi-square test was less than 5, the continuity correction chi-square test was used. The measurement data was expressed by mean  $\pm$  standard deviation ( $\overline{x} \pm$  sd). The measurement data between groups was compared by t test of independent samples. The paired t test was used for comparison within group. P<0.05 meant the difference was statistically significant.

# Results

#### No significant difference in baseline data

There was no marked difference in the general clinical data of gender, age, disease duration, nodule size, BMI, lesion location, disease type,

Category	Intervention group	Control group	$t/\chi^2$ value	P value
Gender	(1-90)	(11-90)	0.084	0.772
Male	53 (55 21)	51 (53 12)	0.004	0.112
Female	43 (44 79)	45 (46 88)		
Age	52 3+6 8	51 4+6 5	0.937	0.350
Course of disease (month)	93+32	91+29	0.454	0.650
Nodule size (mm)	22 3+5 4	21 6+5 8	0.866	0.388
$BMI (kg/m^2)$	23.8+3.6	22.0±0.0 22.9+3.5	1 756	0.081
	20.0±0.0	22.0±0.0	0.616	0.735
	49 (51 04)	54 (56 25)	0.010	01100
Right	38 (39 58)	35 (36 46)		
Rilateral	9 (9 38)	7 (7 29)		
Disease type	0 (0.00)	1 (1.20)	0 791	0.852
Nodular goiter	24 (25 00)	28 (29 17)	0.101	0.002
Hyperthyroidism	27 (28.13)	25 (26 03)		
Thyroid adenoma	32 (33,33)	33 (34 38)		
Thyroid cancer	13 (13 54)	10 (10 42)		
Smoking history	10 (1010 1)	10 (10.12)	0 091	0 763
Yes	35 (36 46)	33 (34 38)	0.001	0.100
No	61 (63 54)	63 (65 62)		
Drinking history	01 (00.04)	00 (00.02)	0.531	0 466
Yes	39 (40 62)	44 (45 83)	0.001	01100
No	57 (59 38)	52 (54 17)		
Cultural level	01 (00100)	02 (0 1121)	0.607	0 895
Primary school	10 (10 42)	8 (8.33)	0.001	0.000
Middle school	18 (18 75)	19 (19 79)		
High school	32 (33,33)	29 (30 21)		
The University	36 (37 50)	40 (41 67)		
Place of residence			0.591	0.442
City	62 (64 58)	67 (69 79)	0.001	0.1.12
Rural	34 (35.42)	29 (30.21)		
Operation time (min)	93.2+16.9	94.8+15.7	0.680	0.498
Intraoperative blood loss volume (ml.)	126.9+10.8	129.5+10.3	1.707	0.090
Anesthesia			0.190	0.662
Venous general anesthesia	85 (88 54)	83 (86 46)	0.200	01002
Rilateral cervical superficial plexus block anesthesia	11 (11 46)	13 (13 54)		
ASA classification	( )		0.058	0.809
	87 (90 62)	86 (89 58)	0.000	0.000
11	9 (9.38)	10 (10 42)		
 Surgical classification	0.00)	10 (10.72)	0.451	0.798
Thyroid cancer resection	13 (13 54)	10 (10 41)	0. FOL	0.1.00
Unilateral or bilateral subtotal resection	67 (69.79)	69 (71.88)		
Modified neck dissection	16 (16.67)	17 (17.71)		

Table 1.	General	information	of interventio	n group an	nd control	group [r	1 (%)] (x ±	sd)
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smoking history, drinking history, cultural level, place of residence, operation time, intraoperative blood loss volume, anesthesia, ASA classification, or surgery classification between the intervention group and control group (P>0.05) (Table 1).

	( )			
Index	Intervention group (n=96)	Control group (n=96)	t value	P value
SAS score				
Before treatment	55.38±6.19	55.29±5.19	0.109	0.913
After nursing	43.69±1.37	47.52±1.28	20.010	<0.001
t value	18.070	14.320	-	-
P value	<0.001	<0.001	-	-
SDS score				
Before treatment	59.53±4.07	58.71±4.29	1.359	0.176
After nursing	38.26±3.14	41.02±1.46	7.809	<0.001
t value	40.540	37.170	-	-
P value	< 0.001	< 0.001	-	-

Table 2. Comparison of SAS and SDS scores between intervention

and control groups  $(x \pm sd)$ 



**Figure 1.** Comparison of SAS score and SDS score between the intervention and the control group. The SAS score was compared between the intervention group and the control group (A); the SDS score was compared between the intervention group and the control group (B). Note: \*\*\*P<0.001.



Figure 2. Comparison of VAS score between the intervention and the control group. Note: \*\*\*P<0.001.

### The intervention group showed lower SAS and SDS after nursing

There was no significant difference in SAS score and SDS score before nursing between the intervention group and control group (P>0.05). The SAS score and SDS scores after nursing in the intervention group were lower than those in the control group (P<0.001) (**Table 2** and **Figure 1**).

The intervention group showed lower VAS score after nursing

The postoperative VAS scores of the intervention group and the control group were  $(2.67\pm 0.35)$  and  $(4.37\pm 0.73)$ , respectively. The VAS score of the intervention group was lower than that of the control group (P<0.001) (Figure 2).

The intervention group showed lower incidence of postoperative complications

In the intervention group, there were 1 case (1.04%) of respiratory convulsion, 3 ca-

ses (3.13%) of laryngeal edema, and 1 case (1.04%) of wound infection and bleeding. The complication incidence rate was 5.21%. In the control group, there were 6 cases (6.25%) of respiratory convulsions, 4 cases (4.17%) of laryngeal edema, and 7 cases (7.29%) of wound infection and hemorrhage. The complication incidence rate was 17.71%. The incidence rate of postoperative complications in the intervention group was lower than that in the control group (P<0.01) (Table 3).

# The intervention group showed higher nursing satisfaction

The nursing satisfaction score of the intervention group was  $(95.35\pm2.68)$ , and the control group was  $(83.49\pm4.62)$ . The nursing satisfaction score of the intervention group was signifi-

Group	n	Breathing convulsion	Throat edema	Incision infection, bleeding	Total incidence (%)
Intervention group	96	1 (1.04)	3 (3.13)	1 (1.04)	5.21
Control group	96	6 (6.25)	4 (4.17)	7 (7.29)	17.71
χ <sup>2</sup> value	-	2.372	0.148	3.261	7.393
P value	-	0.124	0.700	0.071	0.007

Table 3. Comparison of postoperative complication rates in intervention and control groups [n (%)]



**Figure 3.** Comparison of nursing satisfaction score between the intervention and the control group. Note: \*\*\*P<0.001.

cantly higher than that of the control group (P<0.001) (**Figure 3**).

# The intervention group showed higher quality of life

After nursing, the QLQ-C30 of intervention group, the disease control, life behavior, exercise, and psychological and emotional change scores were higher than those in the control group (P<0.001) (**Table 4**).

#### Discussion

At present, the incidence of thyroid disease has been increasing steadily in humans. Surgical resection is a common treatment method for this disease [15]. Thyroid surgery has a certain traumatic effects. It stimulates patients, seriously affecting the physical and mental health of patients. Postoperative complications easily occur, which is not conducive to the recovery of patients [16]. Therefore, in order to improve the treatment effects, it is not only important to implement effective treatment in a timely manner, but also to be supplemented with the appropriate nursing intervention [17].

With the improvement of medical levels, the routine nursing intervention model has been unable to meet the needs and expectations of most patients for quality of care [18]. Highquality nursing is a new type of clinical nursing model with scientific characteristics. Its concept is patient-centered. It is a comprehensive, scientific and holistic nursing intervention model. In order to develop a high-quality nursing intervention model, patient's ideas will be fully considered [19]. Most patients with thyroid disease will have concerns about the condition and surgical plan before surgery, which may induce anxiety, depression and other unhealthy psychology [20]. In view of this case, preoperative health education and psychological care can effectively eliminate patient's adverse emotions. Measures such as guidance of intraoperative position, heat preservation and less limb exposure can keep the patient in a comfortable surgery position [21]. The results of this study showed that after nursing, the SAS score and SDS score in the intervention group and the control group were lower than those before nursing. Moreover, SAS score and SDS score in the intervention group decreased more dramatically. This indicated that high-quality nursing can improve the patient's unhealthy psychological emotions. In the study of Sun et al. [22], the preoperative psychological nursing intervention in prostatic hyperplasia effectively alleviated patients' anxiety and depression. Therefore, proper psychological counseling before surgery is better for the follow-up treatment of patients.

The upper thyroid gland should be separated in thyroidectomy. The upper artery that is disconnected during surgery and may affect the visual field and the superior laryngeal nerve. As a result, postoperative patients may be complicated with hoarseness, and laryngeal edema etc. Incorrect position, wound bleeding, respiratory convulsions are also prone to occur [23, 24]. Therefore, postural guidance, attention distraction, and reasonable diet after sur-

Group	n	Condition control	Life behavior	Motion	Psychological change
Intervention group	96	90.46±2.48	93.46±2.45	92.58±2.06	90.43±2.18
Control group	96	82.59±3.26	84.69±3.57	83.91±3.07	85.21±1.36
χ <sup>2</sup> value	-	18.830	19.850	22.980	19.910
P value	-	< 0.001	< 0.001	<0.001	< 0.001

Table 4. Comparison of quality of life scores between intervention and control groups ( $x \pm sd$ )

gery are carried out. The results showed that the pain score in the intervention group was lower than that in the control group. The postoperative complication rate in the intervention group was lower than that in the control group. This indicated that high-quality nursing can reduce the postoperative pain and complication rate. In a study by Sadati et al. [25], preoperative care intervention can reduce preoperative anxiety and postoperative pain, nausea, vomiting, and other complications among patients with laparoscopic cholecystectomy. In the study of Zhang et al. [26], preoperative education from nurses can reduce the incidence of anxiety and complications for patients with coronary artery bypass grafting. This is similar to our research. Preoperative health education and psychological intervention can improve patients' cognitive ability of disease [27], and correct their bad habits. Patients will actively cooperate with treatment, thus reducing the postoperative complication incidence and promoting rehabilitation. Quality of life reflects the postoperative rehabilitation of surgical patients [28]. The results of this study showed that after nursing, in the QLQ-C30 of intervention group, the disease control, life behavior, exercise, and psychological emotional change scores were higher than those in the control group. It suggested that high-quality care can improve patients' quality of life. In the study of Hoekstra et al. [29], postoperative multidisciplinary nutritional care method was associated with the increased intake of energy and protein during hospitalization. Three months after the follow-up, there were fewer malnourished patients in the intervention group, and the quality of life was better than that in the control group. As a result, a reasonable and healthy diet is essential for the recovery of patients after surgery. A nursing satisfaction survey was conducted when the patients were discharged from the hospital. The results showed that the nursing satisfaction score of the intervention group was higher than that of the control group. It suggests that the recognition degree of patients was high in this care, which provides a powerful reference for subsequent clinical application.

This study demonstrates the feasibility of highquality nursing in thyroidectomy. It is a benefit for postoperative recovery. However, there are still some shortcomings in the study. The preoperative quality of life of patients with thyroid disease was not observed. What's more, the patient's nursing compliance was not investigated. These shortcomings need to be further supplemented in future research.

In summary, high-quality nursing is effective in patients with thyroidectomy. It can improve the patient's adverse emotion, reduce the incidence of postoperative pain and complications, and enhance the quality of life and nursing satisfaction.

#### Disclosure of conflict of interest

None.

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