

## Original Article

# Influence of psychological nursing on emotional status and quality of life of patients after laparoscopic surgery

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**Abstract:** Objective: The aim of the current study was to explore the influence of psychological nursing on emotional status and quality of life levels of patients after laparoscopic surgery. Methods: A total of 352 patients undergoing laparoscopic surgery were randomized into two groups, the observation group (n = 176) and control group (n = 176). After laparoscopic surgery, both groups were given routine nursing, while the observation group was given extra psychological nursing. Clinical related indices, emotional status, quality of life, stress reaction, and pain degrees of the two groups were compared. Degrees of nursing satisfaction of all patients were recorded. Results: Length of hospital stay, recovery times of bowel sounds, and times to first flatus after surgery in the observation group were significantly shorter than those in the control group, presenting significant differences between the two groups ( $P < 0.01$ ). Self-rating anxiety scale (SAS) and self-rating depression scale (SDS) scores of the two groups, after nursing, were significantly reduced, compared with scores before nursing (both  $P \leq 0.001$ ). Scores of the observation group were significantly lower than those of the control group (both  $P < 0.01$ ). World Health Organization Quality of Life (WHOQOL) scores of the two groups, after nursing, were significantly increased. Visual analogue scale (VAS) and brief pain inventory (BPI) scores were significantly reduced, compared with scores before nursing (all  $P \leq 0.001$ ). Scores of the observation group were significantly lower than those of the control group (all  $P < 0.01$ ). Levels of cortisol (Col), epinephrine (E), and norepinephrine (NE) of patients in both groups were significantly increased two hours after the operation, compared with those before the operation (all  $P \leq 0.001$ ). Levels of the observation group were significantly higher than those of the control group (all  $P < 0.01$ ). Satisfaction levels of the observation group were significantly higher than those of the control group ( $P < 0.05$ ). Conclusion: Psychological nursing for patients after laparoscopic surgery can significantly improve negative emotions, relieve pain, and enhance quality of life levels, with high satisfaction among the patients. Thus, it is worthy of clinical application.

**Keywords:** Laparoscopic surgery, psychological nursing, emotion, quality of life, pain

## Introduction

Laparoscopy is a widely used surgical treatment in clinical practice. Trans-abdominal insertion of a laparoscope connected with cold light source into the abdominal cavity ensures access to observation of pathological changes of internal organs in the abdominal cavity. Use of laparoscopes has been gradually extended in clinical practice with gradual improvements in medical instruments. This treatment has the characteristics of creating small wounds and rapid postoperative recovery times, compared

with traditional laparotomy procedures. However, it still has some weaknesses, such as air embolisms and emphysema in the greater omentum during pneumoperitoneum, as well as life-threatening massive blood loss and shock due to damage of intestinal canal and macrovascular caused by the insertion of the cannula into the abdominal cavity. Postoperative adverse events, such as hemorrhages, urine leakage, and air leakage, caused by macrovascular damage due to the extent of procedures and diverse medical devices, especially electric devices, may happen during laparoscopic sur-

gery. Damage or lesions will further bring out different degrees of psychological pressure on the patients [1-3]. At present, with the continuous application of biomedical models, medical workers have converted their traditional focus on the changes of the disease itself to social and psychological dimensions of the patients. This has promoted nursing work, gradually forming a technology-service model, making psychological nursing more and more important.

Clinical findings have indicated that psychological nursing mainly affects the cognition of patients through the behaviors and attitudes of medical workers. Thus, it plays a role in helping relieve pain and improving the quality of life in patients [4]. Some scholars have reported that psychological nursing can significantly reduce the pain of patients with advanced gastric cancer, as well as anxiety, depression, and other negative emotions. In about 82% of patients, symptoms were significantly relieved. This is conducive to the improvement of clinical efficacy [5]. Laparoscopic surgery is a simple operation, with less pain and complications for patients. However, it still presents as a stressor that can significantly enhance patient negative emotions and affect treatment effects. However, psychological nursing has not been used as an important medical measure for patients receiving laparoscopic surgery. This study aimed to explore the influence of psychological nursing on emotional status and quality of life levels of patients after laparoscopic surgery.

### Materials and methods

#### *Patients*

A total of 352 patients that underwent laparoscopic surgery in Traditional Chinese Medicine Hospital Affiliated to Xinjiang Medical University, from July 2016 to February 2017, were randomized into two groups, the observation group ( $n = 176$ ) and control group ( $n = 176$ ). Inclusion criteria: (1) Patients aged over 18 years of age; (2) Patients with no contraindications for this study; (3) Patients with complete clinical data; and (4) Patients with no cognitive impairment; (5) Patients that could effectively communicate. Exclusion criteria: (1) Patients that withdrew from the study; (2) Patients with poor compliance; (3) Patients with severe chronic physical diseases; (4) Patients with malignant

tumors; and (5) Patients with severe diseases in vital organs, such as the heart, brain, liver, and kidneys. The current study was approved by the Medical Ethics Committee of Traditional Chinese Medicine Hospital Affiliated to Xinjiang Medical University and informed consent was obtained from all patients or their families.

#### *Methods*

Patients in both groups were given routine nursing, including preoperative notifications of surgical precautions. They received instructions concerning preoperative fasting for prevention of the risk of aspiration pneumonia or asphyxia due to vomiting. They also received placement of the intraoperative position and close monitoring of vital signs after surgery, with attention to the state and volume of urethral catheters, drainage tubes, and nasogastric tubes. They were notified regarding possible sources of discomfort after surgery.

In addition, the observation group received psychological nursing. Details: (1) Relevant nursing staff members introduced the ward environment at admission, aiming to eliminate unfamiliarity and strengthen the nurse-patient relationship; (2) Before surgery, the professional nursing staff introduced the details of the characteristics, operation process, precautions, and related contents of laparoscopic surgery to patients and their families. All treatment procedures were demonstrated by multimedia or similar equipment. It was emphasized that laparoscopic surgery was a safe and efficient minimally invasive surgery, with the characteristics of quick postoperative recovery and good treatment effects. Thus, patients could get maximum understanding about the treatment and relieve fears, anxiety, and other negative emotions as much as possible. Moreover, the patients were able to communicate with patients that had undergone laparoscopic treatment previously. The patients were instructed to take relaxation therapy and perform abdominal respiration exercises. When necessary, attention diversions were adopted to eliminate nervousness; (3) During surgery, the patients were assisted in positioning. After positioning, the nursing staff encouraged and comforted the patients by genuinely holding their hands; (4) After returning to the ward, the nursing staff informed the patients and their families of the intraoperative status and treatment effects, aiming to avoid extreme anxiety. After the pa-

tients woke up, the nursing staff patiently asked about their postoperative feelings. They informed the patients of possible discomfort, such as pain and abdominal distension after surgery. Additionally, the nursing staff encouraged the patients to do off-bed movements earlier and perform functional exercises, achieving the purpose of accelerating blood flow and gastrointestinal function recovery. Moreover, the patients were informed of the importance of remaining optimistic with a cheerful mind.

### *Outcome measures*

Clinical related indices between the two groups were compared. Self-rating anxiety scale (SAS) and self-rating depression scale (SDS) scores were used to evaluate changes of psychological status of the patients of both groups before and after nursing [6, 7]. Higher scores indicated more severe anxiety or depression states. World Health Organization Quality of Life (WHOQOL) scale scores were used to evaluate the changes in quality of life before and after nursing in the two groups [8]. The scale scores ranged from 0 to 35 points, with higher scores indicating a higher quality of life. Visual analogue scale (VAS) and brief pain inventory (BPI) scores were adopted to evaluate pain degree. Scores of both scales ranged from 0 to 10 points, with higher scores indicating more severe pain levels.

A total of 5 mL fasting venous blood was obtained from the patients of the two groups before surgery. Another 5 mL was obtained at two hours after operation. After centrifugation of the blood at 3,500 r/min, the supernatant samples were collected and stored at -24°C. Cortisol (Col) levels were measured by radioimmunoassay. Epinephrine (E) and norepinephrine (NE) levels were measured by enzyme-linked immunosorbent assays. E and NE kits were purchased from Shanghai Xin Yu Biotech Co., Ltd. (China), while the Col kit was purchased from Shanghai LMAIBio Co., Ltd. (China). All operations were carried out according to manufacturer instructions. The self-made satisfaction evaluation scale was applied to evaluate the degree of nursing satisfaction by all patients. Evaluation of the scale focused on four aspects, including the nursing staff, nursing measures, psychological nursing, and the whole nursing process. The total score was 100 points. Satisfaction was indicated by 85

points or more. General satisfaction was indicated by 70-84 points. Dissatisfaction was indicated by less than 70 points. Degree of satisfaction = satisfaction (cases) + general satisfaction (cases)/total number of cases \* 100%.

### *Statistical analysis*

Statistical analysis was performed using SPSS package for Windows, version 20.0. Measurement data in both groups are expressed as mean  $\pm$  standard deviation ( $\bar{x} \pm sd$ ). Measurement data with normal distribution of inter-group and intra-group comparisons were compared using independent t-tests and paired t-tests, respectively. Enumeration data are expressed as number/percentage (n/%), via  $\chi^2$  tests or Chi-square tests. For all analyses,  $P < 0.05$  indicates statistical significance.

## **Results**

### *Baseline characteristics*

There were no significant differences in sex, age, average duration of disease, underlying diseases, and surgery types between the two groups (all  $P > 0.05$ ), indicating that comparative analysis between the two groups could be conducted. See **Table 1**.

### *Clinical related indices*

Length of hospital stay, recovery times of bowel sounds, and times to first flatus after surgery in the observation group were significantly shorter than those in the control group, presenting significant differences between the two groups ( $P < 0.001$ ). See **Table 2**.

### *Emotional status*

There were no significant difference in psychological status scores between the two groups before nursing ( $P > 0.05$ ). SDS and SAS scores of the two groups, after nursing, were significantly reduced, compared with scores before nursing (both  $P \leq 0.001$ ). Scores of the observation group were significantly lower than those of the control group (both  $P < 0.01$ ). See **Table 3** and **Figure 1**.

### *Quality of life and pain degree*

There were no significant differences in quality of life and degrees of pain between the two groups before nursing ( $P > 0.05$ ). WHOQOL

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**Table 1.** Comparison of baseline characteristics between the two groups

	Observation group (n = 176)	Control group (n = 176)	t/ $\chi^2$	P
Sex (male/female)	90/86	89/87	0.011	0.916
Age (year)	49.2 ± 2.2	49.3 ± 2.4	0.407	0.684
Average duration of disease (d)	2.08 ± 0.19	2.07 ± 0.15	0.548	0.584
Underlying diseases (n)			1.480	0.687
Hypertension	17	14		
Diabetes mellitus	15	16		
Hyperlipidemia	12	18		
Other diseases	20	19		
Surgery type (n)			0.315	0.957
Cholecystectomy	45	44		
Salpingolithotomy	36	40		
Appendicectomy	45	45		
Oophorocystectomy	50	47		

scores of the two groups, after nursing, were significantly increased ( $P \leq 0.001$ ). Scores of the observation group were significantly higher than those of the control group ( $P < 0.01$ ). VAS and BPI scores of the two groups, after nursing, were significantly reduced, compared with scores before nursing (both  $P \leq 0.001$ ). Scores of the observation group were significantly lower than those of the control group (both  $P < 0.01$ ). See **Table 4**.

### *Stress reactions*

There were no significant differences in levels of stress reaction indices between the two groups before surgery (all  $P > 0.05$ ). Levels of Col, E, and NE of patients in both groups at two hours after the operation were significantly increased, compared with levels before the operation (all  $P \leq 0.001$ ). Levels of the observation group were significantly higher than those of the control group (all  $P < 0.01$ ). See **Table 5**.

### *Degree of nursing satisfaction*

Satisfaction degrees of the observation group were significantly higher than those of the control group ( $P < 0.05$ ). See **Table 6**.

## **Discussion**

With the rapid development of medical technology, laparoscopic surgery has developed into a treatment method that combines mod-

ern medical high-tech and conventional surgery, with little damage to abdominal organs. Although patients after laparoscopic surgery present high recovery rates and less complications, they may experience relatively poor postoperative recovery caused by feelings of anxiety due to incomprehension on treatment process or the treatment effects [9-11]. Previous traditional nursing modes adopted in clinical practice were usually put into use according to doctor recommendation, lacking effective

communication between nurses and patients. Moreover, patients may have an inadequate or unclear understanding of the disease and treatment process. With the continuous improvement of nursing concepts, as well as patient requirements for the quality of nursing care, the disease-centered nursing mode has been transformed to a patient-centered mode [12, 13]. Regarding the new mode, psychological nursing plays a key role in its operation. However, the importance of psychological nursing in clinical practice is often ignored during treatment.

Psychological nursing provides specialists, nurses, and psychologists that give psychological care using psychological knowledge for patients with potential or existing psychological problems, requiring psychological help [14, 15]. In this study, patients after laparoscopic surgery were randomly divided into two groups. Both groups were given the same routine nursing, while the observation group received additional psychological nursing. According to emotional status levels during the perioperative period, targeted psychological intervention was carried out to help the patients reduce their negative emotions, establish confidence in overcoming the disease, and promote early recovery from surgery. Results showed that length of hospital stay, recovery times of bowel sounds, and times to first flatus after surgery in the observation group were significantly shorter than those in the control group, with significant differences

**Table 2.** Comparison of clinical related indices between the two groups

	Length of hospital stay (d)	Recovery time of bowel sounds (h)	Time of first flatus after surgery (h)
Observation group (n = 176)	3.58 ± 1.59	9.17 ± 2.41	22.59 ± 4.67
Control group (n = 176)	5.02 ± 1.64	12.66 ± 2.37	33.18 ± 4.74
t	8.363	13.698	21.114
P	< 0.001	< 0.001	< 0.001

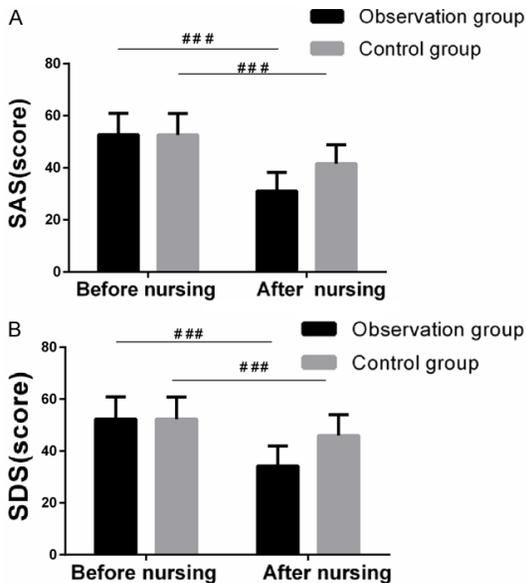
**Table 3.** Comparison of emotional status before and after nursing between the two groups

		SAS	SDS
Observation group (n = 176)	Before nursing	52.70 ± 8.21	52.29 ± 8.51
	After nursing	31.06 ± 7.14 <sup>***</sup>	34.22 ± 7.68 <sup>**</sup> , <sup>###</sup>
Control group (n = 176)	Before nursing	52.63 ± 8.18	52.28 ± 8.47
	After nursing	41.55 ± 7.30 <sup>###</sup>	45.96 ± 8.02 <sup>###</sup>

Notes: Comparison of emotional status of the control group, <sup>\*\*</sup>P < 0.01; intra-group comparison with emotional status related scoring before nursing, <sup>###</sup>P ≤ 0.001. SAS, self-rating anxiety scale; SDS, self-rating depression scale.

Laparoscopic surgery, a stressor, will inevitably bring a variety of negative emotions, including fear and anxiety, to patients. It will activate the sympathetic nervous system through the neuroendocrine system, making the body excessively excited. This will

release a large amount of catecholamines, eventually leading to a significant increase in levels of E and NE. This results in poor postoperative effects with significant declines in quality of life [17, 18]. This study showed that levels of Col, E, and NE of the patients of both groups significantly increased two hours after the operation, compared with levels before the operation. Levels of the observation group were significantly higher than those of the control group. WHOQOL scores of the two groups were significantly increased after nursing. Scores of the observation group were significantly higher than those of the control group, indicating that psychological nursing based on routine nursing can inhibit the excessive release of catecholamines, stabilizing the levels of E and NE. This promotes early postoperative recovery and is more conducive to the improvement of later quality of life. Clinical findings point out that pain is one of the most common complications after laparoscopic surgery. Therefore, administration of analgesics for pain control without paying attention to the chief complaints of patients will bring certain fluctuations to their psychological status [19]. A clinical study with 200 cases of cesarean section patients undergoing epidural anesthesia and implementation of perioperative psychological nursing showed that 14% of the patients in the observation group had obvious tension and anxiety after the operation, while 58% of the patients in the control group had severe tension and anxiety, presenting significant differences between the



**Figure 1.** Comparison of emotional status before and after nursing between the two groups. A. Comparison of SAS before and after nursing between the two groups. B. Comparison of SDS before and after nursing between the two groups. Intra-group comparison with emotional status related scoring before nursing, <sup>###</sup>P ≤ 0.001. SAS, self-rating anxiety scale; SDS, self-rating depression scale.

between the two groups. This indicates that the combination of psychological nursing and routine nursing can obviously improve clinical symptoms of patients. Implementation of psychological nursing is helpful in relieving psychological disorders and tension and anxiety in patients [16].

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**Table 4.** Comparison of quality of life and pain degrees between the two groups

		WHOQOL	VAS	BPI
Observation group (n = 176)	Before nursing	16.55 ± 4.06	5.02 ± 0.35	8.43 ± 1.20
	After nursing	30.05 ± 2.44 <sup>**###</sup>	2.11 ± 0.15 <sup>**###</sup>	2.61 ± 0.33 <sup>**###</sup>
Control group (n = 176)	Before nursing	16.58 ± 4.12	5.03 ± 0.36	8.46 ± 1.18
	After nursing	21.47 ± 3.81 <sup>###</sup>	3.97 ± 0.20 <sup>###</sup>	4.29 ± 0.40 <sup>###</sup>

Notes: Comparison of quality of life and pain degree of the control group, <sup>\*\*</sup>P < 0.01; intra-group comparison with quality of life and pain degree related scoring before nursing, <sup>###</sup>P ≤ 0.001. WHOQOL, world health organization quality of Life; VAS, visual analogue scale; BPI, brief pain inventory.

**Table 5.** Comparison of stress reactions before and after surgery between the two groups

		Col	E	NE
Observation group (n = 176)	Before surgery	228.11 ± 49.84	30.89 ± 3.20	141.79 ± 19.88
	2 h after surgery	317.23 ± 38.22 <sup>**###</sup>	40.95 ± 3.18 <sup>**###</sup>	172.95 ± 22.43 <sup>**###</sup>
Control group (n = 176)	Before surgery	228.20 ± 48.56	30.91 ± 3.17	141.06 ± 19.76
	2 h after surgery	395.41 ± 39.04 <sup>###</sup>	58.97 ± 4.25 <sup>###</sup>	202.01 ± 23.70 <sup>###</sup>

Notes: Comparison with stress reaction of the control group, <sup>\*\*</sup>P < 0.01; intra-group comparison with stress reaction indices before nursing, <sup>###</sup>P ≤ 0.001. Col, cortisol; E, epinephrine; NE, norepinephrine.

**Table 6.** Comparison of degree of satisfaction between the two groups

	Satisfaction (n)	General satisfaction (n)	Dissatisfaction (n)	Degree of satisfaction (n (%))
Observation group (n = 176)	121	36	19	157 (89.20)
Control group (n = 176)	109	32	35	141 (80.11)
$\chi^2$				5.600
P				0.018

two groups. Before the operation and 15 minutes after the operation, respiratory rates, heart rates, and blood pressures of the patients were more stable than those in the control group, with about 78% of the patients in the observation group presenting lower postoperative pain [20]. SDS, SAS, and VAS scores of patients in the two groups, after nursing, were significantly reduced, compared with scores before nursing. Scores of the observation group were significantly lower than those of the control group, indicating that psychological nursing for patients undergoing laparoscopic surgery can significantly reduce anxiety and tension, decrease occurrence of stress reactions, and minimize postoperative pain. Results may be due to the effective implementation of one-to-one psychological counseling from admission, pre-operation, intra-operation, to post-operation, according to the specific conditions of a patient [21]. However, the current study had a limited sample size. Thus, the exact mechanisms of psychological nursing on stress reactions still

require large-scale multi-center in-depth studies.

In conclusion, psychological nursing for patients after laparoscopic surgery significantly improves adverse emotions, relieves pain, and enhances quality of life levels, with high satisfaction among the patients. Thus, it is worthy of clinical application.

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### Disclosure of conflict of interest

None.

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