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Original Article

Effect of comfort nursing on postoperative quality of life, negative emotions and nursing satisfaction in patients undergoing laparoscopic surgery

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Abstract: Objective: This study aimed to explore the impacts of comfort nursing on postoperative quality of life, negative emotions and nursing satisfaction of patients undergoing laparoscopic surgery. Methods: Eighty-four patients who underwent laparoscopic cholecystectomy (LC) in Shengjing Hospital of China Medical University from September 2018 to November 2019 were analyzed retrospectively. Among them, 37 patients with routine nursing were assigned to the control group, while 47 patients receiving comfort nursing were assigned to the research group. The postoperative rehabilitation indexes, complication rate, pain degree at 12 h after surgery, postoperative quality of life, negative emotions and nursing satisfaction were compared between the two groups. Results: After nursing, compared with the control group, the research group experienced notably earlier first time of food intake, first defecation time, first time for ambulation, first anal exhaust time, and recovery time of gurgling sound, shorter length of stay, considerably lower incidence of postoperative complications and Visual Analogue Scale score at 12 h after surgery, and evidently higher scores of quality of life and nursing satisfaction. Moreover, Self-rating Depression Scale and Self-rating Anxiety Scale scores of the research group were significantly lower than those of the control group. Conclusion: For patients undergoing laparoscopic surgery, comfort nursing can relieve their negative emotions, improve their quality of life and nursing satisfaction, reduce postoperative pain, and thus promote postoperative rehabilitation. Hence, it is worthy of clinical promotion.

Keywords: Comfort nursing, laparoscopic surgery, quality of life, negative emotions, nursing satisfaction

Introduction

Benign diseases of gallbladder are the most common diseases in clinical general surgery, mainly including gallbladder stone, acute and chronic cholecystitis, and polyp of gallbladder, among which gallstone is the main one [1-3]. Gallbladder stones are mainly triggered by dietary structure, poor nutritional status, gallbladder infections, and hemolytic diseases [4, 5]. As people's dietary structure changes, the incidence of gallbladder stone is increasing, with a prevalence rate of 4.21% to 11.0%, presenting a trend of afflicting younger people [6, 7]. Most patients with gallbladder stone have no obvious clinical symptoms, and about 40% of patients over 40 years old will have clinical symptoms or serious complications that require immediate surgery [8]. Conservative treatment and surgery are two types of treatment for gallbladder stones at the current stage [9], and cholecystectomy includes laparoscopic cholecystectomy (LC) and open cholecystectomy (OC). With the development of minimally invasive technology, laparoscopic surgery has gradually replaced the traditional open surgery to become the first choice of cholecystectomy, with advantages of fewer traumas, less pain, shorter hospital stay and quicker recovery, which has been widely used in clinical practice [10, 11]. During LC, anesthesia, the processes of artificial pneumoperitoneum establishment, and surgical surgery may cause a series of changes in patients' psychological and physiological functions, leading to discomfort and even compromising surgery or postoperative

recovery [12-14]. Therefore, how to improve the perioperative nursing quality and promote postoperative rehabilitation is one of the hot spots in nursing research.

Comfort nursing is a holistic, individualized, and effective nursing mode that emphasizes the physical and psychological well-being of the patient or the reduction of unpleasantness as an effective goal of care [15-17]. Compared with routine nursing, comfort nursing puts more emphasis on the service concept of "people-oriented, patient-centered", which mainly focuses on the physical, psychological, social and spiritual comfort to develop holistic and comfort care activities for patients [18, 19]. Previous studies have unveiled that comfort nursing can improve nursing quality and patients' quality of life and satisfy their pursuit of a healthy and comfortable life [20, 21]. Ohashi et al. [22] suggested that comfort nursing could promote postoperative recovery of orthopedic patients, facilitate their self-care ability, and reduce postoperative complications. However, there has been little research on comfort nursing for patients undergoing LC.

In this study, patients undergoing LC were intervened by comfort nursing mode, and the impacts of this mode on postoperative quality of life, negative emotions and nursing satisfaction were investigated.

Materials and methods

General data

A total of 84 patients who received LC in Tongji Hospital of China Medical University from September 2018 to November 2019 were analyzed retrospectively. In the first 6 months, we adopted the traditional nursing model, and in the next 8 months, our department introduced comfortable care. According to the different nursing methods, the patients were divided into two groups: the control group (n=37) received routine care, and on this basis, the research group (n=47) received additional comfortable care. The control group included 20 males and 17 females, between 25 and 69 years old, with a mean age of 48.36±4.25 years. The research group included 27 males and 20 females, between 27 and 70 years old, with a mean age of 49.03±4.52 years.

Inclusion and exclusion criteria

Inclusion criteria: (1) All patients met the diagnostic criteria of gallbladder diseases and had indications of LC [23]. (2) All patients were classified as Grade I-II according to American Society of Anesthesiologists (ASA) [24]. (3) Patients had complete clinical data. (4) This study was conducted with the approval of the ethics committee of Shengjing Hospital of China Medical University (ethical batch number: LL2020 (04)), and all patients and their families signed a fully informed consent after being informed of the study.

Exclusion criteria: (1) Patients had contraindications for laparoscopic surgery. (2) Patients were complicated with malignancies or other malignant diseases at the end stage. (3) Patients were complicated with severe organic diseases such as heart, liver and kidney. (4) Patients had coagulation dysfunction or immune system diseases. (5) Patients had cognitive impairment, language dysfunction or hearing impairment. (6) Patients had mental illness or a family history of mental illness. (7) Patients dropped out of the study.

Nursing methods

Patients in the control group received routine nursing intervention mode, which included admission education, preoperative preparation, observation of postoperative vital signs, incision nursing, diet guidance, and health education after discharge.

Patients in the research group received comfort care based on the routine nursing given to the control group, and the specific methods were as follows.

Preoperative nursing: It aimed to create a good hospital environment for patients: room temperature 22-25°C, humidity 50-60%, good ventilation, as well as clean, quiet, comfortable, warm and safe environment. The nurses took the initiative to communicate with patients, give sincere comfort care for patients, encourage them to express their inner feelings, do a good job of psychological counseling, and use leaflets, oral explanations, relevant pictures and other methods to make them understand the disease and operation, eliminate their fear and anxiety, and patiently answer their ques-

tions. In case of special circumstances, it was handled in an orderly manner to give the patients a sense of security and reduce their anxiety by touching their forehead and gently holding their hands. Timely touch can enable patients to obtain feelings such as consideration, understanding, care, comfort and support, and provide high-quality services.

Intraoperative nursing: The temperature was controlled during the operation, and the patients were covered with blankets all the way in and out of the operating room; the air conditioning temperature of the operating room was controlled at 25±2°C; heating blankets could be used if necessary; heat preservation during the recovery period of anesthesia and within 6 h after operation was taken into consideration.

Postoperative nursing: Two hours after operation, the patients were assisted in turning over activities in a conscious and normal state, and were encouraged to get out of bed as soon as possible; the patients were guided to carry out deep breathing training and effective cough and expectoration to keep the respiratory tract unobstructed; the patients were given a correct diet, and they could eat some soups that promote exhaust, such as rice soup and radish soup, so as to enhance intestinal peristalsis, promote exhaust and reduce abdominal distension; the diet should be light, less greasy, nutritious, with a small number of meals, and gradual transition from liquid and semi-liquid to general food; the patients should eat less or no gas-producing foods, such as sugars, soy milk, and starch. Moreover, the nurses gave the patients abdominal massage 6 h after operation. Specifically, the patients laid on their back and bent their knees, while the nurses' four fingers were close together, taking the navel as the center, and avoiding the incision clockwise (15 min each time, three times a day, from light to heavy, and then from heavy to light); the speed was moderate within their tolerance; the nurses should also pay attention to keeping them warm. Additionally, some non-drug pain relief measures were taken, such as listening to music, chatting, guiding muscle relaxation to reduce pain, which can enable patients to carry out limb activities as soon as possible, so as to promote the repair of incisions and tissues and organs.

Outcome measures

(1) The postoperative rehabilitation indexes and the incidence of complications were observed: Postoperative rehabilitation indexes included first time of food intake, first defecation time, first time for ambulation, first anal exhaust time, recovery time of gurgling sound and length of stay.

(2) Pain degree in both groups was observed 12 h after surgery: Visual Analogue Scale (VAS) [25] was applied to assess the degree of postoperative pain before and after nursing. Zero point was adopted for no pain, 1 to 3 for mild pain, 4 to 6 for moderate pain, and 7 to 10 for severe pain. A higher score indicates greater pain.

(3) Negative emotions of the two groups were evaluated: The Self-rating Anxiety Scale (SAS) and Self-rating Depression Scale (SDS) were applied to evaluate the anxiety and depression of patients in the two groups before and after nursing [26]. The total score of SAS scale is 100 points, with scores of 50-70 for mild anxiety, 71-90 for moderate anxiety, over 90 for severe anxiety, and a higher score reveals more serious anxiety. The total score of SDS scale is 100 points, with scores of 50-70 for mild depression, 71-90 for moderate depression, over 90 for severe depression, and a higher score indicates more severe depression.

(4) Postoperative quality of life of the two groups was observed: The Shot Form 36 Health Survey (SF-36) [27] was used to evaluate the quality of life of both groups of patients after nursing. The scale includes eight items: general health, physiological functioning, role physical, body pain, vitality, social functioning, role emotional and mental health. Each item has a score of 0-100, and a higher score indicates better quality of life.

(5) Nursing satisfaction of the two groups was observed: A self-made nursing satisfaction questionnaire was applied for the evaluation of nursing satisfaction of patients in both groups after nursing. The scoring consisted of a total of 20 questions, and the patients were scored based on the content of their own care. Each question is worth 5 points, with a total score of

Table 1. Comparison of general data of patients between the two groups [n (%)] ($\bar{x}$±sd)

Classification	Research group (n=47)	Control group (n=37)	t/χ^2 value	*P* value
Gender			0.096	0.755
Male	27 (57.45)	20 (54.05)		
Female	20 (42.55)	17 (45.95)		
Age (years)	49.03±4.52	48.36±4.25	0.692	0.490
BMI (kg/m^2)	24.05±3.46	24.11±3.58	0.077	0.938
Type of gallbladder disease			0.201	0.904
Gallbladder stone	40 (85.11)	32 (86.49)		
gallbladder polyps	2 (4.26)	2 (5.41)		
cholecystitis	5 (10.64)	3 (8.11)		
Marital status			1.231	0.267
Married	39 (82.98)	27 (72.97)		
Unmarried	8 (17.02)	10 (27.03)		
Place of residence			0.017	0.895
City	26 (55.32)	21 (56.76)		
Countryside	21 (44.68)	16 (43.24)		
Ethnicity			0.541	0.461
Han	43 (91.49)	32 (86.49)		
Minority	4 (8.51)	5 (13.51)		
Education background			0.568	0.451
≥ high school	19 (40.43)	12 (32.43)		
< high school	28 (59.57)	25 (67.57)		
Smoking history			0.517	0.472
Present	12 (25.53)	7 (18.92)		
Absent	35 (74.47)	30 (81.08)		
Drinking history			0.034	0.852
Present	20 (42.55)	15 (40.54)		
Absent	27 (57.45)	22 (59.46)		
Hypertension history			0.714	0.398
Present	14 (29.79)	8 (21.62)		
Absent	33 (70.21)	29 (78.38)		
Diabetes history			0.734	0.391
Present	9 (19.15)	10 (27.03)		
Absent	38 (80.85)	27 (72.97)		

BMI, body mass index.

less than 70 as dissatisfied, 70-89 as satisfied, and equal or more than 90 as great satisfied. Satisfaction = (great satisfied + satisfied) cases/total cases ×100%.

Statistical methods

SPSS 20.0 (IBM Corp, Armonk, NY, USA) was utilized for statistical analysis, and GraphPad Prism 7 for image rendering. The counting data were expressed by [n (%)]. Chi-square test was used to compare the counting data between groups. When the theoretical frequency in Chi-square test was less than 5, continuity correction Chi-square test was adopted. The measurement data were expressed by mean ± standard deviation ($\bar{x}$ ±sd). Independent sample t test was used for the comparison of measurement data between groups, and paired t test for the comparison before and after nursing. When P<0.05, the difference was statistically significant.

Results

General data

There was no significant difference in general clinical baseline data such as gender, age, body mass index (BMI), type of gallbladder disease, marital status, place of residence, ethnicity, educational background, smoking history, drinking history, hypertension history and diabetes history between the two groups (P>0.05), as shown in **Table 1**.

Comparison of postoperative rehabilitation indexes between the two groups

The postoperative rehabilitation indexes of first time of food intake, first defecation time, first time for ambulation, first anal exhaust time, recovery time of gurgling sound and length of stay in the research group were remarkably lower than those in the control group (P<0.05), as shown in **Table 2**.

Comparison of incidence of complications in the two groups

The incidence of postoperative complications in the research group and the control group was 6.38% and 29.73%, respectively, revealing that the incidence was significantly lower in

Table 2. Comparison of postoperative rehabilitation indexes between the two groups

Group	First time of food intake (h)	First defecation time (h)	First time for ambulation (h)	First anal exhaust time (h)	Recovery time of gurgling sound (h)	Length of stay (d)
Control group (n=37)	24.21±3.83	13.82±2.56	12.13±2.67	10.16±1.25	2.28±0.64	5.28±1.02
Research group (n=47)	14.72±2.38	9.33±1.52	8.53±2.41	6.12±0.68	1.12±0.45	3.12±0.25
t	13.920	10.000	6.481	18.910	9.744	14.010
P	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table 3. Comparison of incidence of complications between the two groups [n (%)]

Group	Abdominal distension and abdominal pain	Incision infection	Nausea and vomiting	Total incidence
Control group (n=37)	4 (10.81)	3 (8.11)	4 (10.81)	11 (29.73)
Research group (n=47)	1 (2.13)	0 (0.00)	2 (4.25)	3 (6.38)
X^2	-	-	-	7.447
P	-	-	-	0.006

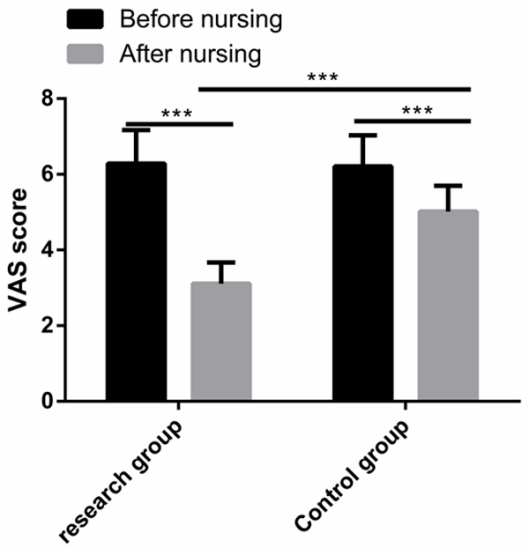

Figure 1. Comparison of postoperative VAS scores between the two groups. Before nursing, there was no considerable difference in VAS score. After nursing, VAS scores of the research group were notably lower than those in the control group at 12 h after surgery. Note: ***P<0.001. VAS, Visual Analogue Scale.

the research group than in the control group (P<0.05), as shown in **Table 3**.

Comparison of VAS scores after treatment between the two groups

No considerable difference could be found before nursing. After nursing, the VAS scores of patients in the research group were notably lower than those in the control group at 12 h after surgery, as shown in **Figure 1**.

Comparison of SAS score and SDS score between the two groups

There was no significant difference in SAS and SDS scores between the two groups before nursing (P>0.05). After nursing, the SAS and SDS scores decreased notably in both groups (P<0.05), with notably lower scores in the research group than those in the control group (P<0.05), as shown in **Figure 2**.

Comparison of quality of life of the two groups

Patients in the research group scored significantly higher on all quality-of-life scores, including general health, physiological functioning, role physical, body pain, vitality, social functioning, role emotional and mental health than patients in the control group. More details are shown in **Figure 3**.

Comparison of nursing satisfaction between the two groups

After nursing, the nursing satisfaction of the research group was notably higher than that of the control group (91.49% vs. 67.57%), as shown in **Table 4**.

Discussion

Gallbladder disease is a common general surgical condition and surgery is the main treatment [28-30]. With the maturity of laparoscopic technology, LC has been gradually applied in clinical practice, and is generally considered as the gold standard for the treatment of benign gallbladder diseases. It effectively surpasses the limitation of surgical contraindications and plays an important part in treating acute gall-

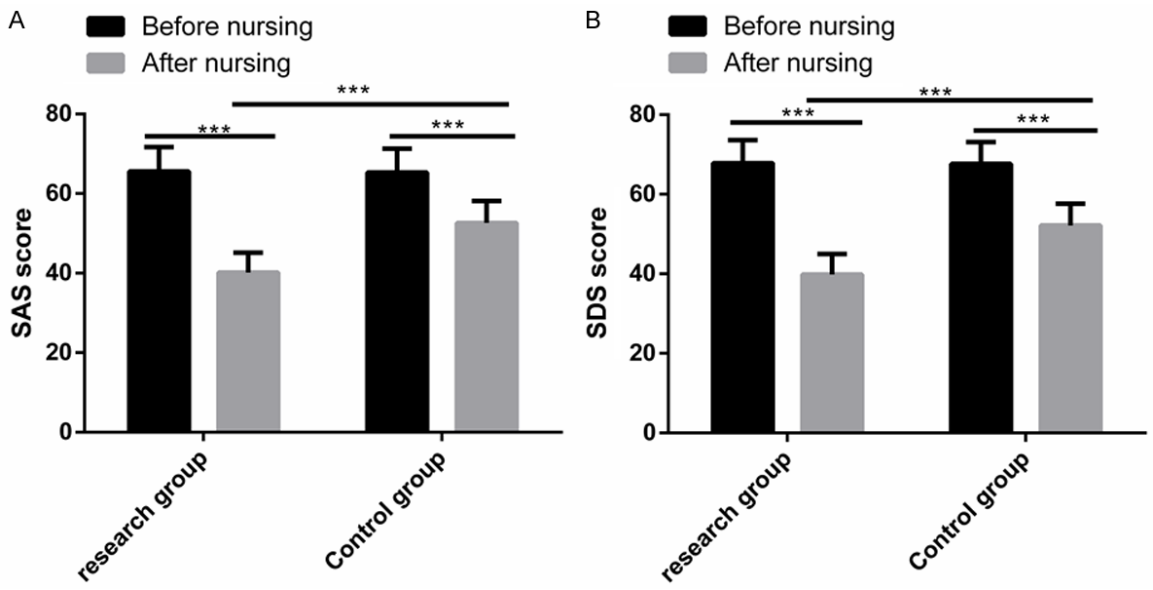

Figure 2. Comparison of SAS and SDS scores between the two groups. A. After nursing, SAS scores of patients were significantly reduced in both groups, and notably lower in the research group than in the control group. B. After nursing, SDS scores of patients were significantly reduced in both groups, and notably lower in the research group than in the control group. Note: ***P<0.001. SAS, Self-rating Anxiety Scale; SDS, Self-rating Depression Scale.

bladder diseases [31-33]. However, any surgery is a kind of stress stimulation for patients, which will bring negative emotions and stress reactions to them in different degrees, thus affecting the surgical treatment effect and rehabilitation process to a certain extent. Besides, elderly patients have less knowledge of related diseases and more worries about the safety and therapeutic effect of laparoscopic technology, and are more likely to have negative emotions such as anxiety, depression, fear, negativity and pessimism [34, 35]. As the modern nursing science and the society develop, the mechanical and simple mode of completing medical tasks of routine nursing can no longer meet the needs of patients. Therefore, it is of great significance to seek a new nursing intervention mode for patients' surgery and postoperative rehabilitation [36].

In this study, we used comfort nursing mode to intervene patients undergoing LC and observed the effects of this nursing mode. Comfort nursing is to integrate patients into the holistic nursing of "people-oriented, patient-centered", which not only meets the multi-level, diversified and personalized needs of patients, but also improves the quality of nursing services [37]. In the research of Xiong et al. [38], comfort nursing reduced the symptoms of functional dyspepsia, increased the gastric emptying rate, enhanced the gastric motility, reduced the depression and anxiety in patients with upper digestive tract diseases, and promoted the recovery of the disease. Besides, Aksoy et al. [39] suggested that the use of comfort nursing can significantly improve postpartum comfort and alleviate postpartum negative emotions of women undergoing caesarean section. In this study, the postoperative rehabilitation indexes of patients in the research group were evidently better than those in the control group in terms of first time of food intake, first defecation time, first time for ambulation, first anal exhaust time, recovery time of gurgling sound and length of stay; the postoperative complication rate in the research group was remarkably lower than that in the control group, indicating that comfort nursing promotes the rehabilitation of postoperative diseases and reduces the occurrence of postoperative complications. Comfort nursing advocates a patient-centered concept, and individualized nursing interventions can keep the patient's mind and body in the most comfortable and optimal state, which greatly facilitates recovery and speeds up the healing process. Our results are similar to those of Xiong et al. [38] Postoperative pain is a kind of adverse physical and mental injury occurring in most patients after surgery, which affects

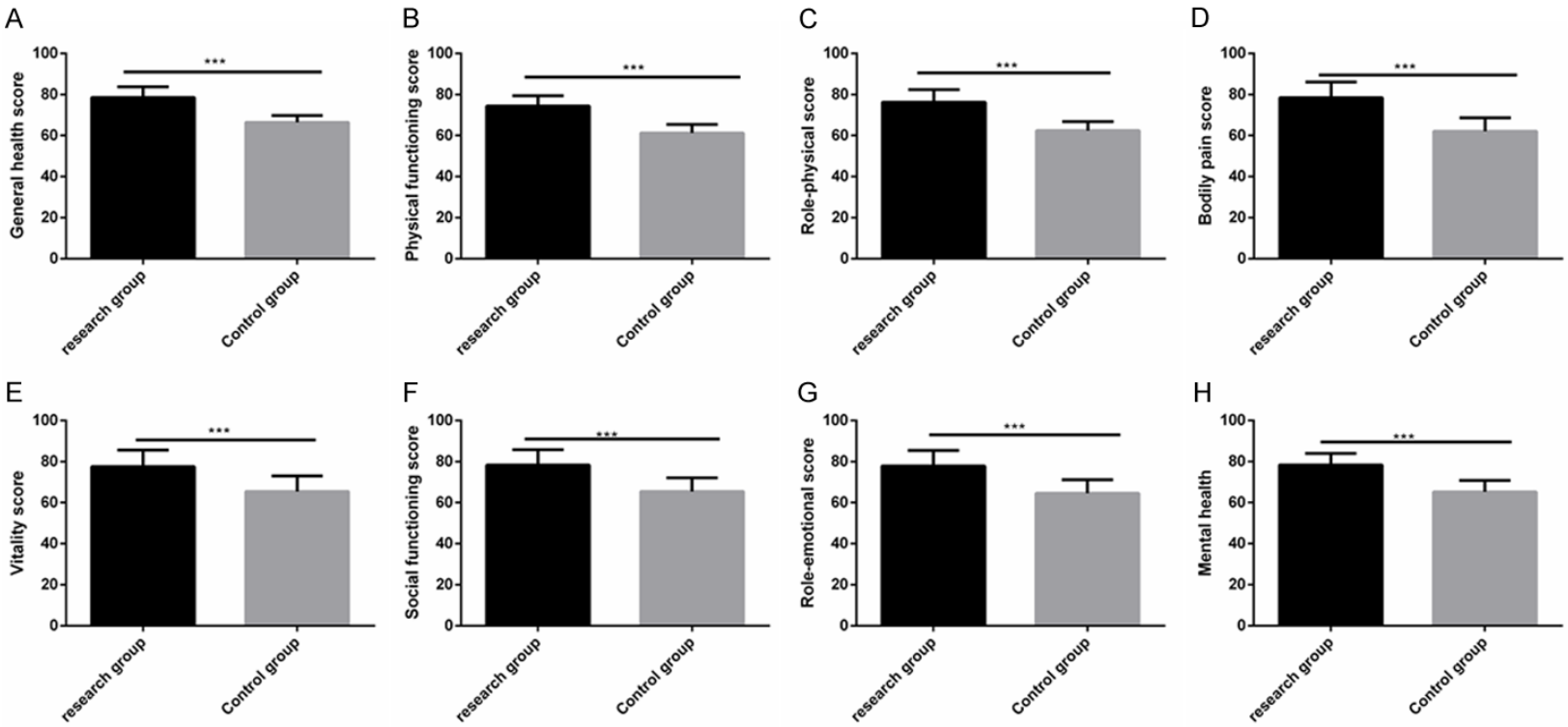

Figure 3. Comparison of quality of life between the two groups. A. The general health score of the research group was significantly higher than that of the control group. B. The physical functioning score of the research group was significantly higher than that of the control group. C. The role physical score of the research group was significantly higher than that of the control group. D. The body pain score of the research group was significantly higher than that of the control group. E. The vitality score of the research group was significantly higher than that of the control group. F. The social functioning score of the research group was significantly higher than that of the control group. G. The role emotional score of the research group was significantly higher than that of the control group. H. The mental health score of the research group was significantly higher than that of the control group. Note: ***P<0.001.

Table 4. Comparison of nursing satisfaction between the two groups after nursing [n (%)]

Item	Research group (n=47)	Control group (n=37)	χ^2 value	*P* value
Great satisfied	30 (63.83)	11 (29.73)	-	-
Satisfied	13 (27.66)	14 (37.84)	-	-
Dissatisfied	4 (8.51)	12 (32.43)	-	-
Nursing satisfaction	43 (91.49)	25 (67.57)	7.683	0.005

their prognosis to a certain extent. VAS score is the standard for the evaluation of postoperative pain. In this study, we found that VAS score in the research group at 12 h after surgery was significantly lower than that in the control group, indicating that comfort care can relieve postoperative pain and increase postoperative comfort. Koras et al. [40] demonstrated that nursing intervention of foot massage can evidently reduce the postoperative pain, anxiety and depression, which finding is also similar to our research result. Since both the surgical procedure and the disease itself can bring about varying degrees of adverse emotions such as anxiety and depression, the SAS and SDS scores become powerful tools for assessing patients' anxiety and depression. In this study, the scores of SAS and SDS in the research group after comfort care were significantly lower than those in the control group, indicating that the nursing model could significantly alleviate the negative emotions of patients. In the study of Xiong et al., comfort care can alleviate the dyspepsia symptoms of patients with functional dyspepsia, improve their depression and anxiety, and promote their recovery, which is basically consistent with our results. We speculate that this is related to the role of personalized psychological nursing in nursing intervention; comfort nursing is people-oriented in the whole process to meet the needs of patients to the maximum extent and to solve patients' physical and mental problems in time, so as to reduce the occurrence of bad emotions of patients. Then, we also used the SF-36 scale to evaluate the quality of life of the patients after operation, and the scores of SF-36 items in the research group were significantly higher than those in the control group, indicating that comfort care significantly improved the quality of life of patients. Finally, we also investigated the patients' satisfaction with nursing, and found that the satisfaction of the research group was significantly higher than that of the control group, which indicated that comfort care was more popular and acceptable among patients. Similar to our research, Shih et al. [40] suggested that the quality of life of patients with LC was related to their functional status and the incidence of postoperative complications. Although this study has confirmed that comfort nursing can bring more benefits to patients undergoing laparoscopic surgery, there is still room for improvement. For example, we can further follow up the long-term outcomes of laparoscopic surgery patients and analyze the risk factors that induce the poor prognosis of laparoscopic surgery patients, thus improving their outcomes. In the future, we will gradually conduct supplementary research from the above perspectives.

To sum up, for patients undergoing laparoscopic surgery, comfort nursing can shorten the hospital stay, reduce postoperative complications such as anxiety, depression, and postoperative pain, and thus improve the recovery of postoperative diseases, postoperative quality of life, and nursing satisfaction.

Disclosure of conflict of interest

None.

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