

## Review Article

# The influence of cognitive nursing on perioperative negative emotion management and the prognoses of ovarian cystectomy patients

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**Abstract:** This study set out to explore the effect and prognosis of cognitive nursing on the perioperative negative emotion management of ovarian cystectomy patients. Methods: Ninety-six patients who underwent ovarian cyst resection in Fenyang Hospital Affiliated to Shanxi Medical University from February 2017 to December 2018 were enrolled in the study. Forty-eight of the patients were randomly enrolled in an observation group (OG) that underwent cognitive nursing during the perioperative period, and 48 of the patients were randomly enrolled into a control group (CG) that underwent conventional nursing. The Self-rating anxiety scale (SAS) and the self-rating depression scale (SDS) were employed to evaluate and compare the two groups' negative emotions before and at three days after the nursing. The efficacy of the nursing in both groups was compared. The ovarian function was evaluated by measuring the FSH, LH, and AMH serum expression levels before and at three months after the operations. Their quality of life at three months after the operations was compared. There were no statistical differences in the SAS and SDS scores in the two groups before the nursing ( $P>0.05$ ). The SAS and SDS scores in the OG were remarkably lower than they were in the CG three days after the surgery ( $P<0.001$ ). The anal exhaust time, the length of the hospital stays and the ambulation time of the patients in the OG were remarkably shorter than they were in the CG ( $P<0.001$ ). The FSH, LH, and AMH expression levels in both groups before the operations were not significantly different ( $P>0.05$ ). The FSH and LH expression levels in both groups at three months after the operations were remarkably lower than they were before the operations ( $P<0.05$ ), but the AMH expression levels were remarkably higher than they were before the operation ( $P<0.05$ ). The FSH and LH expression levels in the OG were markedly lower than they were in the CG ( $P<0.001$ ) at three months after the operations, the AMH expression levels in the OG were markedly higher than they were in the CG ( $P<0.001$ ), and the SF-36 scores in the OG were markedly higher than they were in the CG ( $P<0.01$ ) at three months after the operations. Cognitive nursing can effectively reduce the perioperative negative emotions of patients undergoing ovarian cyst resection and improve their postoperative ovarian function.

**Keywords:** Cognitive nursing, ovarian cyst excision, negative emotions, prognosis

## Introduction

Ovarian cysts are a common female genital disease, and they usually cause symptoms such as menstrual disorders and infertility [1]. Endometriosis, teratoma, and serous or mucinous cystadenoma are the common types of ovarian cysts in women of childbearing age [2, 3]. Most ovarian cysts are discovered by accident, and the patients have no symptoms [4]. It is estimated that about 7% of women in the world will develop ovarian cysts at some point in their

lives [5]. Recently, with the changes of social life and eating habits, the incidence of ovarian cysts has increased steadily. The normal reproductive endocrine process is the basis of female reproduction. Ovarian cysts have adverse effects on the female endocrine system, and lead to infertility [6]. Therefore, the treatment and prognosis analysis of ovarian cyst patients are both significant.

Ovarian cyst resection is currently the preferred surgical method for the treatment of benign

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ovarian cysts in women of childbearing age [7], of which laparoscopic surgery has increasingly become the prevailing method for the treatment of benign ovarian tumors in clinical practice [8]. Surgical resection may inevitably damage normal ovarian tissue or the ovarian reserve, and postoperative inflammation may also cause damage [9]. A decreased ovarian reserve relates to infertility [10]. Among infertile women of different ages, the incidence of ovarian reserve reduction is between 6% and 64% [11]. Compared with women who are infertile for anatomical reasons, women with reduced ovarian reserves have more trouble and more negative emotions relating to their infertility diagnoses [12]. Negative emotions of ovarian cyst patients are bound up with the disease itself, and surgery will also place psychological pressure on patients. Research shows that most patients will have negative emotions such as anxiety, fear of anesthesia, fear of the operating room environment, and fear of the postoperative complications before their operations, and communication among the nursing staff can effectively reduce their pressure [13]. Severe depression is a common complication of surgery, and it may lead to further morbidity and mortality [14]. Anxiety is a common coexisting disease [15]. Cognitive nursing is a kind of treatment method that uses strong experiential support, which intervenes in the patients' cognition, behavior strategy and psychological emotions [16]. Current research results show that cognitive nursing intervention has achieved good benefits in ameliorating the negative emotions caused by anxiety, depression, and major diseases [17-19]. The quality of nursing affects patient recovery and prognosis, so it is vital to provide them with quality nursing during perioperative period.

To sum up, this study will use cognitive nursing to explore the effect and prognosis of perioperative negative emotion management for patients undergoing ovarian cyst resection.

## Data and methods

### *Clinical data collection*

From February 2017 to December 2018, 96 patients undergoing ovarian cyst resections (with the tumors confirmed as benign through postoperative pathological examinations) in Fenyang Hospital Affiliated to Shanxi Medical University were recruited for this study. Forty-

eight of the patients were randomly placed into the observation group (OG) and received cognitive nursing during the perioperative period, and 48 patients were placed into the control group (CG) and received conventional nursing. All the patients signed informed consent forms. This study was approved by the Medical Ethics Committee of Fenyang Hospital Affiliated to Shanxi Medical University.

### *Inclusion and exclusion criteria*

**Inclusion criteria:** All the patients were diagnosed with ovarian cysts through pelvic ultrasound and MRI; the diagnostic criteria referred to the French clinical practice guidelines [20]; their tumor sizes were  $\geq 4$  cm; they had no ovarian surgery history; they were informed and participated in the study voluntarily, and their clinical data were complete.

**The exclusion criteria were:** Malignant tumors, cardiovascular disease, contraindications to surgery, pregnant, lactating, hepatic or renal insufficiency, communication disorder, or poor compliance.

### *Nursing methods*

The patients in the CG received conventional nursing methods, mainly including environmental intervention, posture nursing, and vital sign monitoring. Those in the OG received cognitive nursing methods, including: (1) psychological cognitive nursing: The medical workers communicated with the patients in a timely manner. If the patients suffered from anxiety or depression, the nurses would patiently persuade and help them along with their families. Furthermore, according to each patient's situation, the etiology, treatment methods, efficacy and prognoses of the disease were explained to them, so that they could fully understand it. The medical workers supervised their medication to a certain extent, and reminded them to take and recorded their medication and any adverse reactions. (2) surgical nursing: The medical workers escorted the patients during their operations, communicated with them, understood their feelings and provided them with timely counseling and nursing, and closely monitored their vital signs. (3) life care: The medical workers helped the patients turn over, gave massages, and encouraged and assisted them to get out of bed for appropriate activities. (4) pain cognition nursing: They informed

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the patients that pain would occur after the operations, and distracted their attention by playing music for them and providing acupuncture to relieve their pain symptoms. (5) diet nursing: The medical workers ensured that the patients maintained a scientific, balanced, and nutritious diet, which was mainly light and easy to digest yet satisfied their energy demands.

### *Quantification methods for the FSH, LH, and AMH expression levels*

ELISA was used to measure the levels. All the kits were purchased from the Wuhan MSK Biotechnology Co., Ltd., including the human follicle-stimulating hormone receptor (FSHR) ELISA kit (Art. No.: 69-99768), the human luteinizing hormone (LH) ELISA kit (Art. No.: 69-98526), and the human Mueller tube hormone antibody (MIS/AMH Ab) ELISA kit (Art. No.: 69-99679). Altogether 3 ml of blood from veins was extracted early in the morning from all patients on an empty stomach 24 h before their operations and at three months after their operations. The samples were allowed to stand 30 min at room temperature, then centrifuged at 3000×g at 4°C for 10 min. The supernatant was frozen in a refrigerator at -80°C for centralized quantification.

A blank hole, a standard product hole, and a sample hole to be tested were arranged, the SO standard product with a concentration of 0 was supplemented into the blank hole, the standard product hole was supplemented with the standard product, and the sample hole was first supplemented with the sample to be tested. The sample diluent and the HRP labeled detection antibody were supplemented to all the micropores except the sample hole. They were fully washed to remove any unbound biotinylated antibodies. HRP labeled avidin was supplemented, and TMB substrate was added for color after the samples were washed again. TMB turns blue under catalysis and yellow under the action of acid. The absorbance (OD value) was measured with a microplate reader at 450 nm wavelength, and the corresponding concentration was converted from the standard curve.

### *Outcome measures*

Main outcome measures: The SAS and SDS scores were employed to evaluate and com-

pare the negative emotions of the patients in the two groups before and at three days after the nursing. A total SAS/SDS score below 50 indicated normality, but a higher score indicated serious anxiety/depression over a period of several months. The efficacy of both groups was observed. The ovarian function was evaluated by measuring the FSH, LH, and AMH expression levels in the patients' serum before and at three months after the operations.

Secondary outcome measures: The VAS pain scale was employed to evaluate and compare the patients' pain situations in both groups before the nursing, at 3 h after the surgery and at three days after the surgery. 0 indicated anodynia, and a higher score indicated more severe pain. The perioperative complications of both groups were observed. Their quality of life was evaluated using the SF-36 quality of life scale, which has a total possible score of 100 points. The higher the score, the better the quality of life. A self-made nursing satisfaction questionnaire of Fenyang Hospital Affiliated to Shanxi Medical University was employed to evaluate the nursing satisfaction (total satisfaction = very satisfied + satisfied), and the two groups' overall satisfaction with the nursing work was compared.

### *Statistical analysis*

The collected data of this study were statistically analyzed using SPSS 20.0 (Chicago SPSS Co., Ltd.) medical statistical analysis software and the figures were drawn using GraphPad Prism 7 (San Diego, GraphPad software Co., Ltd.). The counting data usage (%) was analyzed using chi-square tests and expressed using  $\chi^2$ . The measurement data were expressed as the means  $\pm$  standard deviation (Means  $\pm$  SD) and they all conformed to a normal distribution. The comparison between the two groups were done using independent-samples t tests and expressed as t.  $P < 0.05$  was considered statistically significant.

## **Results**

### *Comparison of the general clinical data*

The general clinical data revealed that there was no statistical difference in terms of age, BMI, smoking history, drinking history, family history, place of residence, menstrual disorder

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**Table 1.** Comparison of the patients' general clinical data in the two groups

Factor	Observation group (OG) (n=48)	Control group (CG) (n=48)	t/ $\chi^2$ value	P value
Age (years)	35.7±4.2	36.1±3.3	0.518	0.605
BMI (kg/m <sup>2</sup> )	21.23±2.25	21.46±1.87	0.545	0.587
Smoking history				
Yes	19 (39.58)	22 (45.83)	0.383	0.536
No	29 (60.42)	26 (54.17)		
History of alcoholism				
Yes	23 (47.92)	27 (35.00)	0.668	0.414
No	25 (58.18)	21 (65.00)		
Family history				
Yes	8 (42.50)	11 (22.50)	0.591	0.442
No	40 (52.08)	37 (77.50)		
Place of residence				
Cities and towns	22 (47.27)	27 (45.00)	1.042	0.307
Countryside	26 (52.73)	21 (55.00)		
Menstrual disorder				
Yes	39 (43.64)	42 (47.50)	0.711	0.399
No	9 (56.36)	6 (52.50)		
Age of menarche	12.5±1.6	12.7±1.5	0.632	0.529
Loss of appetite				
Yes	32 (66.67)	36 (75.00)		
No	16 (33.33)	12 (25.00)		
Size of cyst	5.72±1.21	5.68±1.32	0.155	0.877
Cyst morphology				
Unilateral	32 (66.67)	28 (58.33)	0.711	0.399
Bilateral	16 (33.33)	20 (41.67)		
Pathological type				
Chocolate cyst	20 (41.67)	22 (45.83)	0.596	0.897
Teratoma	14 (29.17)	15 (31.25)		
Serous cystadenoma	8 (16.67)	7 (14.58)		
Mucous cystadenoma	6 (12.49)	4 (8.34)		

ders, menarche age, anorexia, cyst size, cyst morphology, or pathological type in the two groups ( $P>0.05$ ), as shown in **Table 1**.

### *Comparison of the SAS and SDS scores before and at three days after the nursing in the two groups*

In this study, by comparing the SAS and SDS scores of the patients in both groups before and at three days after the nursing, we found that their SAS and SDS scores before the nursing had no significant differences ( $P>0.05$ ). The SAS scores of those in the OG ( $42.33\pm 3.21$ ) at three days after the surgery were significantly lower than the scores in the CG ( $49.86\pm 4.16$ )

( $P<0.001$ ), and the SDS levels in the OG ( $38.24\pm 3.57$ ) were significantly lower than the levels in the CG ( $44.58\pm 4.05$ ) ( $P<0.001$ ), as shown in **Table 2**.

### *Comparison of the VAS scores before the nursing, at 3 h after the surgery and at three days after the surgery in the two groups*

The VAS scores revealed that there was no difference between the two groups before the nursing. The VAS scores in the OG ( $5.22\pm 0.75$ ) were dramatically lower than the VAS scores in the CG ( $6.34\pm 0.88$ ) ( $P<0.001$ ) at 3 h after the surgery, and the VAS scores in the OG ( $1.72\pm 0.45$ ) at three days after the surgery were dra-

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**Table 2.** Comparison of the patients' SAS and SDS scores in the two groups

Group	SAS		SDS	
	Before nursing	three days after the operations	Before nursing	three days after the operations
Observation group (OG) (n=48)	68.36±4.28	42.33±3.21*	63.22±4.36	38.24±3.57*
Control group (CG) (n=48)	69.55±4.19	49.86±4.16*	62.78±3.96	44.58±4.05*
t value	1.376	9.929	0.518	8.136
P value	0.172	<0.001	0.606	<0.001

\*indicates that there is a significant difference compared with the value before the nursing.

**Table 3.** Comparison of the VAS scores

Group	Before the nursing	three hours after the operations	three days after the operations
Observation group (OG) (n=48)	5.86±1.24	5.22±0.75	1.72±0.45*
Control group (CG) (n=48)	6.12±1.18	6.34±0.88	3.45±0.89*
t value	1.052	6.711	12.02
P value	0.295	<0.001	<0.001

\*indicates that there is a significant difference compared with the value before the nursing.

**Table 4.** Comparison of the patients' perioperative complications in the two groups

Group	Subcutaneous emphysema	Incision infections	Total cases
Observation group (OG) (n=48)	1 (2.08)	0 (0.00)	1 (2.08)
Control group (CG) (n=48)	7 (14.58)	4 (8.33)	11 (22.92)
χ <sup>2</sup> value	4.909	4.174	9.524
P value	0.03	0.04	0.002

**Table 5.** Comparison of the efficacy

Group	Anal exhaust time	Length of hospital stay	Time it takes to get out of bed
Observation group (OG) (n=48)	8.56±1.98	5.98±1.32	6.42±1.53
Control group (CG) (n=48)	12.56±2.15	9.52±1.76	13.58±3.24
t value	9.482	11.15	13.84
P value	<0.001	<0.001	<0.001

matically lower than of the VAS scores in the CG (3.45±0.89) (P<0.001), as shown in **Table 3**.

### Comparison of the perioperative complications in the two groups

In terms of the perioperative complications, there was one case of subcutaneous emphysema and no cases of incision infection in the OG, and there were 7 cases of subcutaneous emphysema and 4 cases of incision infection in the CG, and the total incidence of complications in the two groups was significantly different (P<0.05), as shown in **Table 4**.

### Comparison of the efficacy of the patients in the two groups

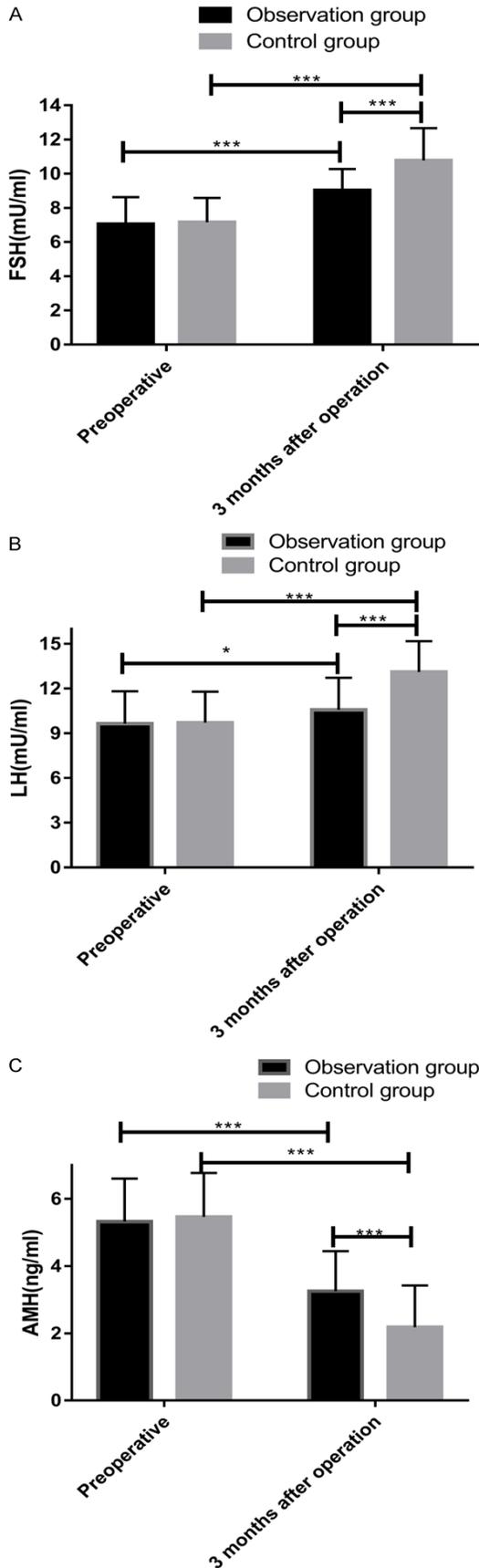
By comparing the efficacy of the patients in the two groups, we found that the anal exhaust times of the patients in the OG (8.56±1.98) were dramatically shorter than the corresponding times in the CG (12.56±2.15) (P<0.001), and the length of the hospital stays of the patients in the OG (5.98±1.32) were dramatically shorter than the hospital stays in the CG (9.52±1.76) (P<0.001), and the ambulation time of the patients in the OG (6.42±1.53) were dramatically shorter than the ambulation times in the CG (13.58±3.24) (P<0.001), as shown in **Table 5**.

### Comparison of the serum FSH, LH, and AMH expression levels in the two

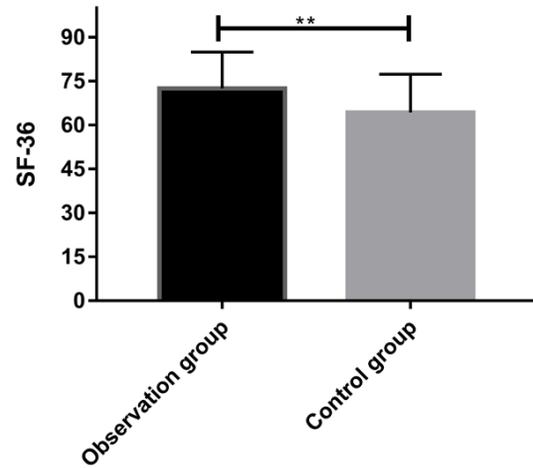
groups before and at three months after the operations

The serum FSH, LH, and AMH expression levels of the patients in both groups before and at three months after the operations indicated that there were no statistical differences in the levels before the operations (P>0.05). The patients' FSH and LH levels in the two groups at three months after the operations were significantly lower than they were before the operations (P<0.05), but the AMH expression was significantly higher than it was before the operations (P<0.05). In the OG, the patients' FSH

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**Figure 1.** Comparison of the serum FSH, LH, and AMH expression levels between the two groups before and at three months after the operations.



**Figure 2.** Comparison of the patients' SF-36 scores at three months after the operations. The SF-36 scores of the patients in the OG ( $72.54 \pm 12.38$ ) were dramatically higher than they were in the CG ( $64.25 \pm 13.15$ ). \*\*\* indicates  $P < 0.01$ .

expression levels ( $9.03 \pm 1.24$ ) were significantly lower than the FSH expression levels in the CG ( $10.78 \pm 1.88$ ) ( $P < 0.001$ ), LH expression levels in the OG ( $10.58 \pm 2.15$ ) were significantly lower than they were in the CG ( $13.12 \pm 2.06$ ) ( $P < 0.001$ ), and the AMH expression level in the OG ( $3.25 \pm 1.19$ ) were significantly higher than they were in the CG ( $2.18 \pm 1.24$ ) ( $P < 0.001$ ), as shown in **Figure 1**.

### Comparison of the patients' quality of life in the two groups at three months after the operations

SF-36 was employed to evaluate the quality of life of the patients in both groups at three months after the operations. It was found that the SF-36 scores in the OG ( $72.54 \pm 12.38$ ) were significantly higher than they were in the CG ( $64.25 \pm 13.15$ ) ( $P < 0.01$ ), as shown in **Figure 2**.

### Comparison of the nursing satisfaction

By comparing the patients' nursing satisfaction levels in the two groups, we found that the number of patients who were satisfied with the nursing in the OG was dramatically higher than it was in the CG ( $P < 0.001$ ). There was no significant difference in the two groups in terms of the number of patients who were satisfied with

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**Table 6.** Comparison of the nursing satisfaction

	Observation group (OG) (n=48)	Control group (CG) (n=48)	$\chi^2$ value	P value
Very satisfied	20 (41.67)	4 (8.33)	14.22	<0.001
Satisfied	25 (52.08)	30 (62.50)	1.064	0.302
Dissatisfied	3 (6.25)	14 (29.17)	8.649	0.003
Total satisfaction	45 (93.75)	36 (70.83)		

the nursing ( $P>0.05$ ), but the number of those who were unsatisfied with the nursing in the CG was dramatically higher than it was in the OG ( $P<0.05$ ). The total nursing satisfaction in the OG was dramatically higher than it was in the CG ( $P<0.05$ ). More details are shown in **Table 6**.

### Discussion

Endometriosis, teratoma, and serous or mucinous cystadenoma are common types of ovarian cysts in women of childbearing age. Endometriosis is one of the most common gynecological diseases. It is estimated that about 50% of women with fertility problems suffer from endometriosis, and it has a negative impact on the mental health and quality of life of some patients [21]. In this study, we gave patients psychological cognitive nursing, psychological counseling, and disease-related health education, in order to reduce their fear, anxiety, and other adverse emotions. We discovered that the SAS and SDS scores of the patients in both groups after the nursing were dramatically lower than they were before the nursing, and of the scores in the OG after the nursing were dramatically lower than they were in the CG, indicating that cognitive nursing can effectively relieve their anxiety and depression compared with conventional nursing. Davidson et al. [22] verified that cognitive behavioral nursing for insomnia patients can improve their sleep and mood. Flygare et al. [23] also found that cognitive nursing can effectively alleviate the depressive symptoms of mild to moderately depressive patients. The research results of Youxiang et al. [24] are similar to the results of this study.

Functional cysts usually show chronic abdominal pain [25], and ovarian cysts such as endometriosis also have pain symptoms [26, 27]. Research shows that [28] chronic pain can damage patients' quality of life. Psychological and physical care can effectively reduce the pain of patients and improve their quality of life. In addition, we carried out psychological cogni-

tive nursing and pain cognitive nursing for the patients, and we diverted their attention through communication and listening to music. The VAS score results revealed that there was no difference in the scores between the patients in the two groups before the nursing. The VAS scores of the

OG were markedly lower than the scores in the CG at three h after the surgery and at three days after the surgery, indicating reduced pain. Then we recorded the data on the incidence of perioperative complications. The results indicated that the incidence of subcutaneous emphysema and incision infections in the OG were markedly lower than they were in the CG. Cognitive nursing can reduce the incidence of adverse complications and relieve patients' pain. The occurrence of complications can incur additional economic expenses on the patients and their families, and it increases their pain. In the results of this study, the anal exhaust times, the length of the hospital stays, and the ambulation times of those in the OG were dramatically shorter than those in the CG, and the reduction in the postoperative complications was tied to the reduction in the length of the hospital stays [29]. Cognitive nursing alleviated the patients' pain while it improved their efficacy, so it is worthy of clinical promotion.

The evaluation of the ovarian reserve is the key to infertility [30, 31]. The quantification of the serum AMH, FSH, and LH levels has been widely used in the clinical evaluation of ovarian reserve function [32, 33]. We measured the expression levels of FSH, LH, and AMH in the patients' serum in both groups before and at three months after the operations, and we discovered that there was no statistical difference in the levels of the patients in both groups before their operations. The serum FSH and LH expression levels in the OG were dramatically lower than they were in the CG at three months after the operations. The results showed that personalization can improve the patients' ovarian reserve functions substantially. We carried out all-round clinical care for them, effectively preventing complications and reducing the damage caused by the disease itself and by the operation on ovarian function. Then we compared the quality of life of the patients in the two groups at three months after the opera-

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tions using the SF-36 scale. The results showed that the SF-36 scores of those in the OG were significantly higher than they were in the CG. Personalized nursing can significantly improve their quality of life compared with conventional nursing. We carried out high-quality nursing intervention on the perioperative psychological state, diet guidance, pain situation, and health cognitive education of the patients receiving cognitive nursing intervention, which improved their negative emotions and pain and promoted an improvement in their quality of life. Finally, by comparing the two groups, we found that the total satisfaction with the nursing in the OG was remarkably higher than it was in the CG. This suggests that patients have a very high appreciation of the cognitive nursing model, which provides a strong basis for the application and promotion of cognitive nursing clinically in the future.

Nevertheless, there are also some limitations to this study. In the first place, the nursing methods in this study mainly focus on the perioperative nursing of patients. Compared with some home nursing methods, our nursing time was limited. Concurrently, due to the development of the network, remote nursing guidance can also be conducted [34]. Whether there will be different results after using these nursing methods is still unclear. In the second place, this study did not evaluate the patients' quality of life before the nursing. It is not clear to what extent cognitive nursing specifically improves their quality of life. These limitations will be addressed and eliminated in future studies.

Overall, cognitive nursing can effectively reduce the perioperative negative emotions of patients undergoing ovarian cyst resection and can improve patients' ovarian function and quality of life after surgery.

### Disclosure of conflict of interest

None.

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