

## Original Article

# Improvement of quality of life, social support, and sexual satisfaction in patients with ovarian cancer via an optimized health education pathway

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Received November 18, 2019; Accepted January 1, 2020; Epub March 15, 2020; Published March 30, 2020

**Abstract:** Objective: This study aims to investigate the effect of an optimized health education pathway on the nursing of patients with ovarian cancer. Methods: Eighty-three ovarian cancer patients hospitalized from June 2018 to December 2018 were divided into two groups in a random, double-blind draw fashion. The control group (n=41) underwent routine health education while the observation group (n=42) received the optimized pathway of health education. The compliance, quality of life, social support, quality of sexual life, and sexual function were compared. Results: All the following data were obtained after intervention. (1) The compliance of the observation group was 92.86% while that of the control group was 75.61% ( $P<0.05$ ). (2) As compared with the control group, the observation group showed lower Hamilton Anxiety Rating Scale (HAMA) and Hamilton Depression Rating Scale (HAMD) scores ( $P<0.05$ ). (3) Scores in subjective support, objective support, and utilization of support in the observation group were higher than those in the control group ( $P<0.05$ ); (4) Scores in sexual desire, arousal, lubrication, orgasm, satisfaction and pain in the observation group were higher than those in the control group ( $P<0.05$ ). (5) The observation group had higher General Self-Efficacy Scale (GSES) scores at discharge, 1 month after discharge, and 3 months after discharge as compared with the control group ( $P<0.05$ ). (6) The scores of physiological field (PH), psychological field (PS), environmental field (EN) and social relations field (SR) in the observation group were higher than those in the control group ( $P<0.05$ ). Conclusion: The optimized health education pathway can improve the compliance, quality of life, social support, sexual function and quality of sexual life of patients with ovarian cancer.

**Keywords:** Ovarian cancer, optimized health education path, quality of life, social support, sexual satisfaction

## Introduction

With the development of diagnostic techniques and the improvement of detection rates, the detection rate of cancer clinically has also gradually increased. Ovarian cancer is one of the most common malignant tumors in women with a devastating consequence on their lives. It has multiple pathological types due to highly complicated secretion functions, tissue anatomy and embryogenesis in the ovary, and it is latent with a low diagnosis rate in the early stages, leaving most patients at the advanced stage when diagnosed [1, 2].

Although the diagnostic rate has gradually increased due to better detection and diagnostic techniques used in the early stages, the sur-

vival rate is only about 30% within 5 years. Its clinical treatment includes radiotherapy, chemotherapy, and surgery [3]. Eligible patients receive complicated and long-term treatment, and therefore they have varying degrees of physical and mental impacts. The surgical treatment is accompanied by pains suffered during the operation and postoperative recovery, whereas the radiotherapy and chemotherapy expose patients to various side effects, greatly reducing their quality of life. Thus, it is of clinical importance to improve their quality of life.

Clinically, ovarian cancer patients have low compliance with treatment and nursing due to their low awareness of disease knowledge [4]. Health education is an important means to improve patients' disease awareness and com-

pliance. Nursing staff are the main implementers of health education and should provide medicine instruction and guidance in the aspects of complication prevention, life, diet, and rehabilitation [5]. However, routine health education has resulted in poor outcomes. Optimized health education pathway refers to the eknowledge optimization on the basis of routine health education to make the health education plan more feasible, targeted and effective. Routine health education only focuses on education related to diseases and treatment, and only emphasizes education at the beginning of admission and at the time of discharge, while optimized health education pathway emphasizes all aspects of physical, psychological, disease, treatment, rehabilitation, and daily life; and the education is carried out throughout the patient's hospitalization. Vanleerberghe P et al. [6] applied the optimized health education pathway in the nursing of cancer patients, and the results showed that the clinical indicators as well as the self-behavior scores of the patients were better than that of the routine health education group. Another study [7] confirmed that the optimized health education pathway could significantly increase the compliance of the patients. However, there are few studies on the application of optimized health education pathway in ovarian cancer care, and the discussion on the application value is not comprehensive. In this study, 83 patients with ovarian cancer were selected to analyze the effect of an optimized health education pathway, in a bid to provide guidance for better nursing in ovarian cancer.

### Materials and methods

#### *Materials*

Eighty-three patients with ovarian cancer hospitalized from June 2018 to December 2018 were randomized in a double-blind draw fashion, with 41 in the control group and 42 in the observation group. All these subjects have signed the written informed consent, and the study was approved by the Ethics Committee of the Affiliated Hospital of Inner Mongolia Medical University. (1) Inclusion criteria: subjects with ovarian cancer who met the diagnostic criteria [8] and who were pathologically confirmed; subjects who are married; subjects who once underwent excision, and received adjuvant chemotherapy for about 7 cycles after excision;

subjects whose median survival was estimated to be over 12 months; subjects who had normal communication and cognition. (2) Exclusion criteria: subjects who were unmarried; who had cognitive impairment; who had mental illness; who had severe organ diseases of heart, liver, lung and kidney; those without sexual life.

#### *Methods*

The control group was only provided with fundamental health guidance via basic and simple knowledge transfer during each visit. The observation group was given an optimized health education pathway and their health education differed from hospitalization to different times after discharge. The details were as follows: (1) Day 1 of admission: the nursing staff first made a preliminary assessment of their psychological conditions when a patient was hospitalized, including degree of anxiety and ability to cope with physical and mental stress. The nursing staff are aware of the patients' familiarity with ovarian cancer and its treatment and rehabilitation. In addition, the importance and necessity of receiving treatment as soon as possible should be delivered to the patient, and advanced clinical treatment options and their clinical practice should be introduced to help the patient build better confidence in dealing with diseases and treatment. (2) Day 2 of admission: a further assessment was conducted of the degree of anxiety and stress tolerance. Doctors' technical level was presented to the patient before treatment, and patients who were to receive treatment would communicate with those with ovarian cancer in convalescence, in order to increase their confidence, security and motivation. (3) Day 3 of admission: patients were informed of the alternatives for ovarian cancer treatment and the safety and efficacy. Family members were encouraged to participate in the treatment, during which an independent venue was provided for more communication and interaction between patients and their families, so that the patients might get emotional support from their families. The staff made evaluation of how much patients know about their own status, and developed health education programs for the weakness in patients' knowledge, laying the foundation for the following health education. (4) Day 4 of admission: before surgery, patients were given full psychological support, including active guidance and assistance in addressing patients'

reasonable needs. (5) Day 5 of admission: after surgery, the nursing staff gave patients more care, such as timely communication of surgical results and the current conditions of patients, and give exhortation to relax patients for better rehabilitation. In addition, the nursing staff encourage patients to express their inner feelings and provide them assistance as much as possible in satisfying their reasonable needs. (6) Days 6-8 of admission: pathological results were usually obtained by patients who had received surgery treatment. Before being informed of the nature of the disease, the patients would be fairly nervous and have fear of the pathological results. Therefore, the nursing staff notify them on time, and provide adequate psychological support to patients and their families. Congratulations and information of the next treatment plan came to patients whose cancer was shown to be benign according to pathological results. As for the patients with malignant cancer, nursing staff encourage them and let them know that their tumors were luckily detected at the early stage so that they can be effectively treated with advanced medical technology and obtain good prognosis. (7) Day 9 of admission: the nursing staff took the initiative to introduce the follow-up treatment to patients and their families, suggested families to spend more time with patients and give support and encouragement to patients, and in a timely manner inform the nurses of their psychological state and nursing needs. (8) Day 10 of admission: propaganda and education should be given before patients' discharge. The final assessment should also be made on this day. The nursing staff listen patiently to patients' chief complaint, inform them that they would not lose sexual function completely after the treatment, but might have an influence on it, and put forward the methods to improve the quality of sexual life.

### *Observation indicators*

**Compliance:** evaluation was performed in compliance of treatment, medication, diet, and life-style. Patients who were able to accomplish these 4 items during the hospitalization were considered as completely compliant, 2 or 3 items as partially compliant and 1 item as disobedient to doctors. The total compliance was calculated by the complete compliance + partial compliance and evaluated when patients were discharged from hospital.

**Negative emotions:** the Hamilton Depression Rating Scale (HAMD) [9] was used as a way of

determining patients' levels of depression while the Hamilton Anxiety Rating Scale (HAMA) [10] was for measuring the severity of patients' anxiety. HAMD scores of 0-7 are considered as normal, 8-20 scores as possible depression, 21-35 scores as affirmative depression and scores over 35 as indicative of severe depression. HAMA scores of  $\geq 29$  are considered as severe anxiety, 21-28 scores as clear anxiety, 14-20 scores as affirmative anxiety, 7-13 scores as possible anxiety, and 0-7 scores as no anxiety. The evaluation was performed before and after intervention.

**Social support:** the Social Support Rating Scale (SSRS) [11] was performed to evaluate social support, which included 3 items with 10 sub-items in total: objective support (sub-items 2, 6, and 7, scores 1-18), subjective support (sub-items 1, 3, 4, 5, scores 8-32), utilization of support (sub-items 8, 9, 10, scores 3-12). The scale totaled between 12 and 62 points. The higher scores indicate the higher social support. The evaluation was performed before and after intervention.

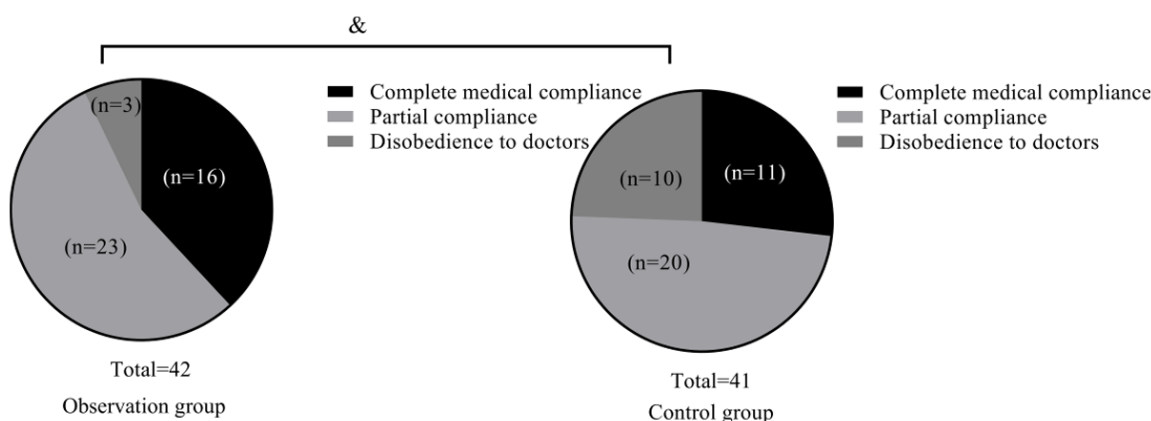
**Sexual satisfaction:** it was evaluated by the Female Sexual Function Index (FSFI) [12]. The scale items include sexual desire, arousal, lubrication, orgasm, sexual satisfaction, and pain. Each of these 6 factors is rated on a scale of 1-5. The higher scores indicate the better sexual function and sexual satisfaction. The evaluation was performed before and after the intervention.

**Self-efficacy:** it was measured by the General Self-Efficacy Scale (GSES) [13], which contains 10 questions scoring on 1-4-levels. Incorrect answer is recorded as 1 point, a little correct as 2 points, roughly correct as 3 points, and completely correct as 4 points. The total score is the sum of scores of each question, ranging from 10 to 40 points. The higher scores indicate the stronger self-efficacy. Measurement was performed at admission, discharge, one month after discharge, and three months after discharge, respectively.

**Quality of life:** was evaluated with the summary table of the World Health Organization quality of life measurement scale (WHOQOL-BREF) [14], in terms of the physiological field (PH), psychological field (PS), environmental field (EN), and social relations field (SR) with 6, 6, 7 and 7 questions, respectively. They are rated on 1-5 levels, totaling 6-30, 6-30, 7-35, and 7-35 po-

**Table 1.** Comparison of general data ( $\pm$  s)/[n (%)]

Data		Observation group (n=42)	Control group (n=41)	t/X <sup>2</sup>	P
Age (years old)		46.38 $\pm$ 12.75	45.71 $\pm$ 11.49	0.251	0.802
Height (cm)		166.85 $\pm$ 10.45	168.92 $\pm$ 12.41	0.823	0.413
Weight (kg)		63.58 $\pm$ 5.75	64.18 $\pm$ 6.23	0.456	0.650
Degree of education	Secondary or below	9 (21.43)	9 (21.95)	1.638	0.204
	Upper secondary	23 (54.76)	24 (58.54)		
	College or above	10 (23.81)	8 (19.51)		
Cancer staging	Early	12 (28.57)	10 (24.39)	1.251	0.172
	Medium	16 (38.10)	16 (39.02)		
	Advanced	14 (33.33)	15 (36.59)		



**Figure 1.** Comparison of the compliance. The two groups differed little in the number of patients who were fully compliant ( $P>0.05$ ) and those who were partially compliant ( $P>0.05$ ), but the observation group had less patients who showed disobedience ( $P<0.05$ ). & indicated that  $P<0.05$  when comparison was made of the number of unsatisfied patients in the two groups.

ints, respectively. The higher scores indicate the higher quality of the corresponding field. The evaluation was performed before and after intervention.

#### Statistical analysis

SPSS Statistics V22.0 was used for the statistical analysis. The measurement data were expressed as mean  $\pm$  standard deviation (SD), which were compared intra or inter group with the Independent-Samples *T* Test. The count data were expressed as [n (%)] and analyzed between groups and within groups through  $\chi^2$ , whereas intra-group comparison results were analyzed by ANOVA. The results were considered statistically significant at  $P<0.05$ .

### Results

#### Comparison of general data

There was no significant difference in terms of average age, average height, average weight,

degree of education, and proportion of each cancer stage between the two groups ( $P>0.05$ ) (Table 1).

#### Comparison of compliance

In the observation group, 16 (38.10%) patients showed complete compliance, 23 (54.76%) showed partial compliance, and 3 (7.14%) showed no compliance, while those in the control group were 11 (26.83%), 20 (48.78%) and 10 (24.39%), respectively. The observation group had a compliance rate of 92.86%, and the control group 75.61% ( $\chi^2=4.672$ ,  $P=0.031$ ) (Figure 1).

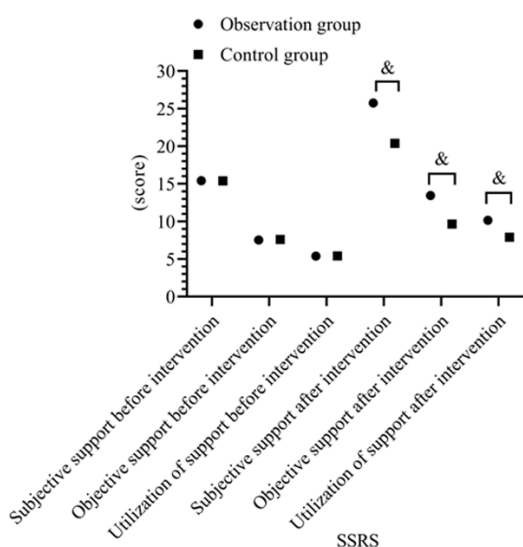
#### Comparison of negative emotions

There was no significant difference in pre-treatment HAMA and HAMD scores between the observation group and the control group ( $P>0.05$ ). After intervention, both groups had HAMA and HAMD scores significantly lower than

**Table 2.** Comparison of anxiety and depression before and after intervention ( $\bar{x} \pm s$ , points)

	Number of cases	HAMA		HAMDEN	
		before intervention	after intervention	before intervention	after intervention
Observation group	42	24.26 $\pm$ 4.95	13.52 $\pm$ 2.15*	26.30 $\pm$ 4.89	14.27 $\pm$ 2.41*
Control group	41	24.38 $\pm$ 4.73	18.51 $\pm$ 2.49*	25.83 $\pm$ 4.67	18.42 $\pm$ 3.18*
t		0.113	9.780	0.448	6.711
P		0.910	0.000	0.656	0.000

Note: compared with that before treatment, \* $P < 0.05$ .



**Figure 2.** Comparison of social support. Before-intervention comparison had little difference between the control group and the observation group in subjective support, objective support and utilization of support ( $P > 0.05$ ). After intervention, the three items scored significantly higher in the observation group relative to the control group. & indicated  $P < 0.05$  when the two groups were compared at the same time point.

those measured before intervention ( $P < 0.05$ ), and the observation group had significantly lower HAMD scores as compared with the control group ( $P < 0.05$ ) (Table 2).

#### Comparison of social support

Before intervention, the observation group and the control group obtained subjective support of (15.42 $\pm$ 2.19) and (15.38 $\pm$ 2.23), objective support of (7.52 $\pm$ 1.14) and (7.59 $\pm$ 1.24) and the utilization of support of (5.38 $\pm$ 1.07) and (5.40 $\pm$ 1.12) points, respectively. After intervention, subjective support and objective support scores were (25.75 $\pm$ 3.62) and (13.45 $\pm$ 3.65) in the observation group, and (20.37 $\pm$ 3.04) and (9.65 $\pm$ 2.15) in the control group. The utilization of support scored (10.15 $\pm$ 1.08) points in the observation group and (7.89 $\pm$ 1.02) points in

the control group. These data indicated no significant differences in subjective support, objective support, and utilization of support between the two groups before intervention ( $P > 0.05$ ) but higher scores in the observation group after intervention ( $P < 0.05$ ) (Figure 2).

#### Comparison of sexual satisfaction

Before intervention, there was no significant difference between the two groups in sexual desire, arousal, lubrication, orgasm, satisfaction, and pain ( $P > 0.05$ ). After intervention, these indicators scored significantly higher in the observation group than in the control group ( $P < 0.05$ ) (Table 3; Figure 3).

#### Comparison of self-efficacy

GSES scores for self-efficacy differed a little between the observation group and the control group at admission ( $P > 0.05$ ), but increased gradually from discharge to 3 months after discharge in both groups, which indicated remarkable variations as compared with data collected at admission ( $P < 0.05$ ). The GSES scores of the observation group were significantly higher than those of the control group at discharge, 1 month after discharge, and 3 months after discharge ( $P < 0.05$ ) (Table 4).

#### Comparison of quality of life

PH, PS, EN and SR scores of the two groups were roughly the same before treatment ( $P > 0.05$ ) and increased after intervention ( $P < 0.05$ ). Besides, the observation group showed significantly higher scores in the four items by comparison with the control group ( $P < 0.05$ ) (Table 5; Figure 4).

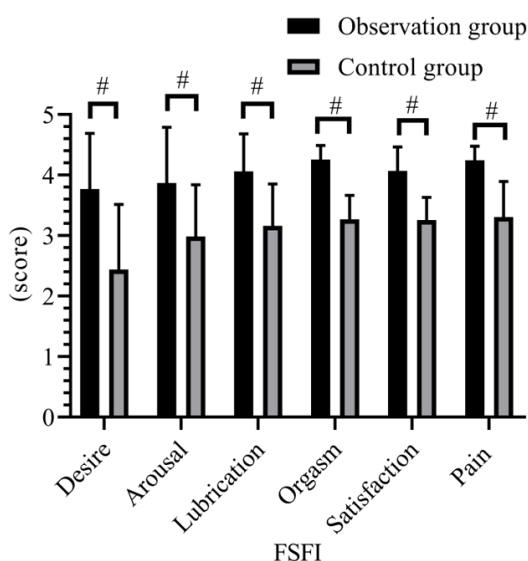
#### Discussion

Although the progress of medical technology has gradually increased the survival rate and

**Table 3.** Comparison of quality of life before and after intervention ( $\bar{x} \pm s$ , points)

	Time	sexual desire	Sexual arousal	Genital lubrication	Sexual satisfaction	Orgasm	Pain during sex
Observation group (n=42)	before intervention	1.42±1.23	1.50±1.08	1.31±1.02	1.57±0.96	1.75±0.78	1.43±0.62
	after intervention	3.75±0.78*	3.86±0.79*	4.01±0.53*	4.21±0.27*	4.04±0.34*	4.23±0.19*
Control group (n=41)	before intervention	1.43±1.20	1.51±1.06	1.32±1.01	1.59±0.99	1.76±0.77	1.45±0.65
	after intervention	2.43±0.86*	3.02±0.72*	3.14±0.50*	3.23±0.30*	3.21±0.38*	3.27±0.50*
t		7.328	5.059	7.689	15.651	10.493	11.615
P		0.000	0.000	0.000	0.000	0.000	0.000

Note: t and p are the post-treatment statistical values of the two groups. Compared with the pre-treatment data within groups, \* $P < 0.05$ .



**Figure 3.** Comparison of sexual life satisfaction. After intervention, the observation group had significantly higher scores of sexual desire, arousal, lubrication, orgasm, satisfaction and pain, as compared those of the control group (all  $P < 0.05$ ). # indicated  $P < 0.05$  when the two groups were compared in terms of the same indicator.

prolonged survival time, there are clear problems in the quality of life for patients with malignant tumors. It has been found that most patients with malignant tumors mainly suffered from decreased social ability, reduced sociality, worsened family relationships, and decreased quality of sexual life [15]. High quality of life is a result of the combination of physical health and psychological and social considerations.

Sexual life is considered as an important factor involved in quality of life. Patients' sexual harmony, quality and satisfaction will have a direct effect on their quality of life. Health education is an important means to promote patients' health, and nursing staff is the guider of health

education. In addition to improving individual behavior of patients, the good work of nursing staff can also help patients seek comprehensive social and family support and create a suitable atmosphere for patients' health [16]. In the current study, FSFI showed that the observation group with an optimized health education pathway had significantly higher scores of sexual desire, arousal, lubrication, orgasm, satisfaction, and pain than those of the control group with routine health guidance. Its scores of PH, PS, EN and SR were also significantly higher than those in the control group ( $P < 0.05$ ). This suggested that the optimized health education pathway may improve sexual satisfaction and better the quality of life for patients with ovarian cancer. The observation group showed better nursing outcomes because the nursing staff refined the optimized health education into a daily schedule during the hospitalization of the patients, and considered the situation of the patients' families. Through all aspects of health education for patients and their families, patients learned more about the cancer, and their families showed greater understanding and support for patients, leading to more harmonious family relationships, and thus significantly improving the quality of sexual life and quality of life. Nursing staff emphasize to patients and their spouses in health education that normal sexual life will not affect the disease, but stimulate the secretion of hormones, leading to the improvement of immunity. Early recovery of sexual life can improve the quality of life [17, 18]. Such education can make patients feel more secure about recovering their sexual life, and may ease worries about sexual life. As the quality of sexual life can be recovered to a greater extent, patient satisfaction can be improved to a greater extent.

**Table 4.** Comparison of GSES scores before and after intervention ( $\bar{X} \pm s$ , points)

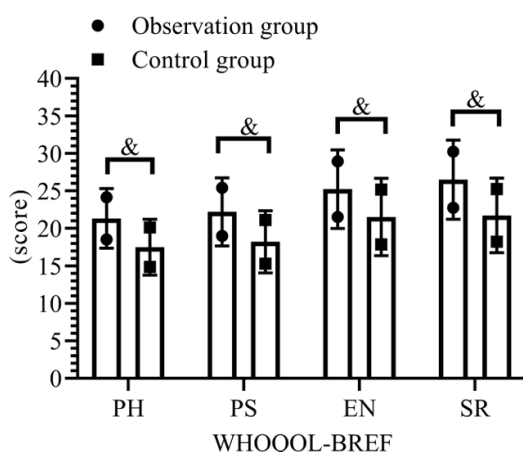
	Number of cases	At admission	At discharge	1 month after discharge	3 months after discharge
Observation group	42	15.24±3.29	20.58±3.54*	25.57±4.02*	32.16±4.29*
Control group	41	15.07±2.31	17.95±2.78*	21.42±3.82*	27.46±4.13*
t		0.272	3.758	4.819	5.083
P		0.786	0.000	0.000	0.000

Note: compared with data at admission within groups, \* $P < 0.05$ .

**Table 5.** Comparison of quality of life before and after intervention ( $\bar{X} \pm s$ , points)

	Time	PH	PS	IN	SR
Observation group (n=42)	before intervention	13.56±2.29	14.05±2.43	16.85±3.26	17.24±3.29
	after intervention	21.42±3.58*	22.47±3.61*	25.42±4.72*	26.37±4.87*
Control group (n=41)	before intervention	13.67±2.42	14.10±2.49	17.01±3.34	17.19±3.30
	after intervention	17.48±3.29*	18.27±3.02*	21.13±4.28*	21.59±4.23*
t		5.217	5.742	4.335	4.769
P		0.000	0.000	0.000	0.000

Note: t and p are the post-treatment statistical values of the two groups. Compared with the pre-treatment data within groups, \* $P < 0.05$ .



**Figure 4.** Comparison of the quality of life. Scores of PH, PS, EN, and SR were significantly higher in the observation group as compared with the control group after intervention ( $P < 0.05$ ). & indicated  $P < 0.05$  when the two groups were compared in the same indicator.

The results of this study showed that the compliance of the observation group after intervention was 92.86%, which was significantly higher than that of 75.61% in the control group. In addition, the observation group had higher GSES scores at discharge, 1 month after discharge, and 3 months after discharge than those of the control group ( $P < 0.05$ ). This indicated that with the optimized health education

pathway applied at different stages of health education, patients have higher awareness of ovarian cancer and the importance of compliance with treatment and nursing, hence compliance is higher. Besides, the continuous health education enabled patients to have more self-care knowledge under the guidance of nursing staff, so that they can carry out self-care better after discharge, and thus their self-efficacy will be significantly improved.

Idahl A et al. [19] found that social support is another factor affecting the quality of life of patients with malignant tumors. It will not only affect their physical and mental health, but also affect their utilization of health services. Hill EM et al. [20] and Liu C et al. [21] reported that in terms of physical health, social support is closely associated with the incidence and mortality of ovarian cancer, as well as physical and mental health. Another analysis of social support and mortality in elderly patients conducted by Hill EM et al. [22] showed that any loss of awareness, contact frequency, attachment, and dimensions of social support will lead to an increase in death risk. The current study showed that the optimized health education pathway significantly reduced the HAMA and HAMD scores of the observation group, and the subjective support, objective support, and utilization of social support scores were

significantly higher than those in the control group. This implied that the optimized health education pathway may enable patients with ovarian cancer to achieve higher social support while improving their adverse psychological status. Its favorable outcomes are mainly due to its great strategy that different health education is for patients at different stages during hospitalization. Continuous health education enables patients to have a comprehensive understanding of diseases, treatment, rehabilitation and so on. Thus they are more confident and willing to integrate into social communities, participate in social activities, and communicate with others, so that their negative emotions can be alleviated, and social support can be improved [23]. Hill EM et al. [24] and Nazik E et al. [25] found that the social support of cancer patients is in direct correlation with their negative emotions, self-harm, suicidal ideation, and eating disorders. Low social support can lead to clear mental and psychological symptoms. Therefore, it is of great importance to pay attention to health education of cancer patients and improve their social support.

In summary, the optimized health education pathway is worthy of promotion and implementation, which can significantly improve the quality of life, social support, and sexual satisfaction of ovarian cancer patients, and alleviate their negative emotions. However, this was a retrospective study with no subject screening in advance and a small number of subjects. There was no comprehensive analysis of the results, leading to possible biased results. A future study should focus on a larger sample size and more aspects of in-depth research, and conduct prospective studies to draw more scientific and representative research conclusions, and provide more guidance for clinical treatment of ovarian cancer patients.

## Disclosure of conflict of interest

None.

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