

Original Article

The effect of psychological nursing on the short- and long-term negative emotions and quality of life of cervical cancer patients undergoing postoperative chemotherapy

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Abstract: Objective: The purpose of this study was to analyze the effect of psychological nursing intervention on the short- and long-term negative emotions and changes in the quality of life in patients with cervical cancer who underwent postoperative chemotherapy. Methods: 141 patients with cervical cancer who received postoperative chemotherapy in our hospital were recruited as the study cohort. They were divided into the study group (80 cases) and the control group (61 cases) according to the different nursing methods each underwent. The patients in the control group underwent routine nursing, and the study group also underwent psychological nursing. The changes in the quality of life and the negative emotions of the patients in the two groups before and after the intervention were compared, and the correlation between the quality of life and the negative emotions were explored. Results: The patients' Quality of Life Questionnaire (EROTC-QLQ-C30) and Self-rating Anxiety Scale (SAS) scores in the two groups before the intervention were not significantly different ($P > 0.05$). A re-evaluation at the end of the 90 day-intervention showed that the EROTC-QLQ-C30 scores in the study group were significantly higher than they were in the control group ($P < 0.05$). A dynamic evaluation showed that the proportion of patients with mild anxiety in the study group was higher than it was in the control group at 30, 60, and 90 days of intervention ($P < 0.05$). A Spearman correlation analysis showed that the SAS scale and EROTC-QLQ-C30 scores were negatively correlated ($r = -0.4438$, $P < 0.05$). Conclusion: The implementation of psychological intervention can help alleviate the short- and long-term negative emotions of cervical cancer patients who underwent postoperative chemotherapy, and it is feasible and conducive to the patients' quality of life. We recommend carrying out the clinical promotion and application of this psychological intervention.

Keywords: Psychological nursing, cervical cancer, chemotherapy, short-term and long-term, negative emotions, quality of life, effect analysis

Introduction

Cervical cancer, the most common malignant gynecological tumor, poses a serious threat to women's health [1]. Data show that in 2010 [2], there were approximately 460,000 new cases of cervical cancer worldwide, and approximately 230,000 new cases in Asia, accounting for about 50% of the cases worldwide. In China, there were 100,000 new cases that year, accounting for about 20% of the global number of new cases. At present, the number of deaths

from cervical cancer each year reaches as high as 30,000, and it has become a worldwide public health problem [3].

Surgery combined with radiotherapy is a common treatment for advanced cervical cancer, as it can better relieve the clinical symptoms and prolong patients' survival times [4]. However, clinical practice has found that, when affected by the condition, cervical cancer patients have stronger negative emotions during the intervention [5]. A survey of 90 patients with advanced

The effect of psychological nursing on cervical cancer patients

cervical cancer showed that 78.89% of the patients had higher anxiety and depression scores than the domestic norm, and a follow-up showed that most of the patients were worried about their illnesses [6]. In addition, chemotherapy will also significantly reduce the quality of life of cervical cancer patients. One study found that chemotherapy drugs not only significantly affect patients' physical functions and reduce their self-recognition due to significant side effects and the long treatment cycles, the drugs also have a negative impact on the development of the treatment [7].

Psychological nursing refers to the intervention that the nurses carry out to influence the psychological activities of the patients positively with the applied psychology and technology in the nursing process in order to achieve the nursing goals [8], which has been proved to be effective in improving the quality of life and the self-efficacy of patients with advanced cancer. The results of a prospective study conducted on 80 patients with advanced lung cancer showed that psychological nursing can not only relieve patients' symptoms of perceived somatization, it can also reduce the compulsion and hostility scores significantly [9]. Another study found that psychological nursing can also help improve patients' self-nursing abilities and relieve their negative emotions [10]. The above studies have provided theoretical references for the development of this survey. The authors of this paper set out to explore the changes in the negative emotions and quality of life of cervical cancer patients who underwent psychological nursing during postoperative chemotherapy, so as to provide guidance for improving their prognosis. The details are as follows.

Materials and methods

General materials

A total of 141 patients who underwent postoperative chemotherapy intervention for cervical cancer in our hospital from January 2019 to January 2020 were recruited as the study cohort, and they were divided into a study group (80 cases) and a control group (61 cases) according to the different interventions each patient underwent.

Inclusion criteria: (1) All the patients were pathologically diagnosed with cervical cancer

and underwent surgery and chemotherapy. (2) The patients were all between 20 and 60 years old. (3) The patients had an educational background of elementary school or higher. (4) The patients all had clear verbal expression. (5) The survey was implemented with the approval of the Medical Ethics Committee. (6) Patients were able to use WeChat proficiently and had smartphones. (7) The patients signed the informed consent.

Exclusion criteria: (1) Patients with mental illnesses. (2) Patients with other serious diseases such as congenital heart disease or severe hypertension. (3) Patients with visual and hearing impairments. (4) Patients with drug or alcohol dependence. (5) Patients with other malignant tumors. (6) Patients with autoimmune diseases.

Rejection criteria: (1) Patients who were lost to follow-up during the study. (2) Patients who voluntarily requested a suspension or withdrawal during the survey.

Intervention methods

The patients in the control group only underwent routine nursing interventions, including health education, functional training, the prevention of complications, and regular follow-up in addition to the treatment.

The patients in the study group were given additional psychological nursing in addition to the treatment the control group underwent. The details are as follows: (1) The establishment of a psychological intervention team. An intervention team was established, which was composed of surgeons, psychologists and primary nurses to learn the key points of postoperative nursing for cervical cancer, common psychological disorders, and the application of psychological evaluation scales, and to make psychological intervention plans initially. (2) Psychological evaluation: The patients underwent one-to-one communication and evaluations to determine their psychological states. The patients' general clinical data were recorded in order to evaluate the impact on the patients' psychological states. Personalized psychological intervention plans were developed with the patients and their families. (3) Psychological intervention: ① Hospital intervention. When the patients came for a checkup or treatment,

The effect of psychological nursing on cervical cancer patients

Table 1. The main content of the WeChat official account after the patients were discharged from the hospital

Push time	Topic	content	Form
0-30 days after discharge	Health knowledge and life tips	Cervical cancer related knowledge, common complications, common psychological problems, nursing cases	Video
30-60 days after discharge	Emotional guidance, life tips	diet guidance, marital relationship guidance, daily life guidance	Video
60-90 days after discharge	Experience sharing	Sharing of successful treatment cases, experience sharing, self-recognition reshaping	Video or text
	Psychological care	Set up a special counseling line, where psychological counselors provide patients with psychological counseling online	Online consultation
	Social support	Encourage family members to pay more attention to the patients and provide them with positive psychological guidance and comfort, so that patients can establish treatment confidence.	Video

the intervention team took measures such as positive guidance and positive psychological suggestions to encourage the patients to express their own negative emotions. And then the nurses analyzed the causes of the negative emotions from the perspective of the patients, informed the patients of the importance of the psychological interventions, and guided the patients to accept their own situations, adjust their negative attitudes, and strengthen their positive responses. ② Nursing intervention outside the hospital. The nursing interventions outside the hospital mainly relied on WeChat using a WeChat official account and personal chat. The main purpose of the personal chat was to provide the patients with psychological health education and to help the patients resolve their psychological doubts. The official account focused on the promotion of health knowledge, exercise skills, prevention of complications, and guidance on marital relationships, the details of which can be seen in **Table 1**. (4) Periodic evaluations. Regular follow-ups were used to evaluate the psychological states of the patients and record their recovery statuses. Group meetings were held regularly to revise the intervention plan.

Observation indicators and evaluation standards

Changes in the patients' quality of life before and after the intervention: The EROTC-QLQ-C30 was used to evaluate the patients' quality of life in the two groups before and after the intervention, which included role functions, cognitive functions, social functions, physical functions, and emotional functions with 5-grade scores of 1-5 points. The total score was the sum of the scores of each item. The higher the score, the better the patients' quality of life [11].

Changes in the patients' anxiety before and after the intervention: SAS was used to evaluate the anxiety of the patients in the two groups before and during the intervention. The SAS is a commonly-used tool for evaluating negative emotions in clinical practice, and it is often used to evaluate the state of adults with anxiety symptoms. The scale includes 20 items with a 4-grade scoring method of 1-4 points in each item. The total score of the scale is the sum of the scores of each item. A score below 50 indicates no anxiety, a score of 50-60 indicates mild anxiety, a score of 61-70 indicates moderate anxiety, and a score of above 70 indicates severe anxiety [12].

Statistical methods

The collected data was entered into EXCEL. The statistical analysis of the data was carried out using SPSS 22.0, and a normal distribution test was carried out on the collected data. If the data conformed to a normal distribution, the count data would be expressed in the form of [n (%)]. Chi-square tests were employed for the inter-group comparisons. The measurement data were expressed as the mean \pm standard deviation. We used t-tests for the inter-group comparisons. The correlation analyses were performed using Spearman's rank correlation coefficient. GraphPad Prism 8 was used as the plotting software in this study. $P < 0.05$ was considered statistically significant [13].

Results

Comparison of the differences in the two group's general clinical data

The general clinical data of the two groups, such as age, nationality, operation method,

The effect of psychological nursing on cervical cancer patients

Table 2. A comparison of the general clinical indicators between the two groups ($\bar{x} \pm s$)/[n (%)]

General clinical data		Study group (n=80)	Control group (n=61)	T/ χ^2	P
Average age (years)		41.22±2.33	40.98±2.82	0.553	0.581
Average weight (kg)		63.33±2.11	63.10±2.28	0.619	0.537
Tumor staging	II	8	6	0.014	0.993
	III	40	30		
	IV	32	25		
Operation methods	peritoneoscopy	70	56	0.674	0.412
	laparotomy	10	5		
Chemotherapy regimens	taxol+cisplatin	40	31	0.009	0.923
	docetaxel+cisplatin	40	30		
Nations	the Han nationality	63	51	0.527	0.468
	others	17	10		

Table 3. A comparison of the two groups' EROTC-QLQ-C30 scores before and after the intervention ($\bar{x} \pm s$)

Items	Study group (n=80)				Control group (n=61)			
	Before the intervention	After intervention	t	P	Before the intervention	After intervention	t	P
Role function	6.21±0.21	8.82±0.21	78.605	< 0.01	6.19±0.32	7.27±0.32	18.984	< 0.01
Cognitive functions	6.23±0.19	8.78±0.19	84.882	< 0.01	6.33±0.11	7.17±0.11	42.173	< 0.01
Social functions	6.13±0.89	8.11±0.89	14.07	< 0.01	6.28±0.66	6.98±0.66	5.857	< 0.01
Physical functions	13.88±1.28	17.11±1.28	15.96	< 0.01	14.01±1.12	15.87±1.12	9.172	< 0.01
Emotional functions	14.33±2.21	18.28±2.21	11.304	< 0.01	14.56±1.98	18.87±1.98	12.022	< 0.01
Total score	46.18±3.88	71.29±3.88	40.93	< 0.01	45.98±2.98	62.19±2.98	30.041	< 0.01

chemotherapy regimen, educational background, occupation, etc., were collected to compare the inter-group differences. The results showed that the inter-group differences of the above data were not statistically significant ($P > 0.05$), so the two groups were comparable (Table 2).

Changes in the EROTC-QLQ-C30 scores before and after the intervention in the two groups

The EROTC-QLQ-C30 was used to evaluate the patients' quality of life in the two groups before the intervention and at 90 days after the intervention, and the inter-group and intra-group differences were compared. The results of the intra-group comparison showed that, after the intervention, the EROTC-QLQ-C30 scores in each item in the two groups were significantly higher than they were before the intervention, and the difference was significant ($P < 0.05$). The inter-group comparison showed that the EROTC-QLQ-C30 scores in each item in the two groups before the intervention were not significantly

cantly different ($P > 0.05$). After the intervention, the EROTC-QLQ-C30 scores in each item in the study group were higher than they were in the control group, with significant inter-group differences ($P < 0.05$) (Table 3; Figure 1).

Changes in the two groups' anxiety during the intervention

The SAS was used to evaluate the anxiety of the patients in two groups, and the four time points of before the intervention, at 30 days of intervention, at 60 days of intervention, and at 90 days of intervention were evaluated. The evaluation indicator was the proportion of the different anxiety levels of the two groups. The results showed that there was little difference in the proportion of the SAS scores between the two groups of patients before the intervention ($P > 0.05$), but the proportion of the SAS scores of mild anxiety in the study group was significantly lower than it was in the control group at 30 days, 60 days, and 90 days of the intervention, and the inter-group difference was significant

The effect of psychological nursing on cervical cancer patients

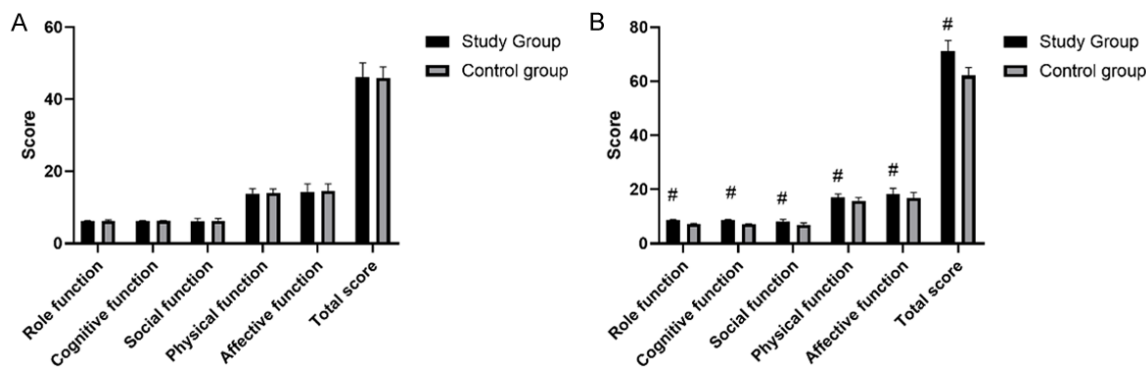


Figure 1. A comparison of the scores of each item on the EROTC-QLQ-C30 between the two groups before and after the intervention. The inter-group comparison found that the scores of each item on the EROTC-QLQ-C30 between the two groups had small differences before the intervention ($P > 0.05$) (A). After the intervention, the scores of each item on the EROTC-QLQ-C30 of the study group were significantly higher than the scores of each item in the control group ($P < 0.05$) (B). # means that, compared with the control group, the inter-group difference with the same indicator is statistically significant.

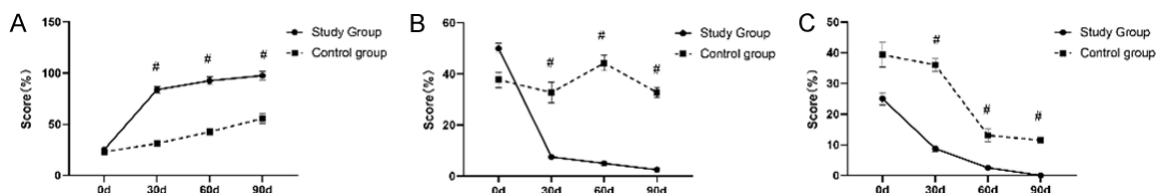


Figure 2. Changes in anxiety of the two groups during the intervention. The analysis showed that at the beginning of the intervention, the proportions of patients with mild anxiety (A), moderate anxiety (B), and severe anxiety (C) were not significantly different between the two groups ($P > 0.05$). On the 30th, 60th, and 90th days of the intervention, the proportion of mild anxiety in the study group was significantly higher than it was in the control group, with significant inter-group differences ($P < 0.05$). # means that the inter-group difference is statistically significant with the same indicator and at the same time.

($P < 0.05$) (Figure 2). The comparison of SAS between the two groups at 90 days of the intervention and before the intervention showed that the SAS scores of the two groups were significantly lower than they were before the intervention, and the difference was significant ($P < 0.05$) (Table 4).

Evaluation of the influence of anxiety changes on the quality of life scores

Spearman's correlation analysis was used to explore the correlation between the SAS scores and EROTC-QLQ-C30 scores of the cervical cancer patients undergoing postoperative chemotherapy. The results showed that as the SAS scores of the patients decreased during the intervention process, and their EROTC-QLQ-C30 scores showed a significant upward trend, indicating that the SAS scores were negatively correlated with the EROTC-QLQ-C30 scores ($r = -0.4483$, $P < 0.05$) (Figure 3).

Discussion

The incidence of cervical cancer has remained high in recent years. A previous study showed that cervical cancer patients are mainly middle-aged and elderly [14], but in recent years, there has been a clear trend of younger people in some areas, with the average age of the patients being 52 years old, and the age of onset of the carcinoma in situ declining to 30-34 years old, nearly 20 years earlier than that of infiltrating carcinoma. Epidemiological surveys also show that the age of onset of cervical cancer in our country has gradually decreased in recent years, and the affected people also suffer from factors such as an early sexual life, multiple sexual partners, smoking, oral contraceptives, and others [15]. The number of new cases of cervical cancer in China each year has reached 130,000, accounting for about 5% of all cancer patients, and the number of deaths from cervical cancer each

The effect of psychological nursing on cervical cancer patients

Table 4. A comparison of the intra-group differences in the SAS scores before and after the intervention in the two groups ($\bar{x} \pm s$)

Groups	n	Before the intervention	After intervention	t	P
Study group	80	73.22±9.18	43.22±3.22	27.582	< 0.001
Control group	61	74.01±8.87	56.89±5.55	12.779	< 0.001

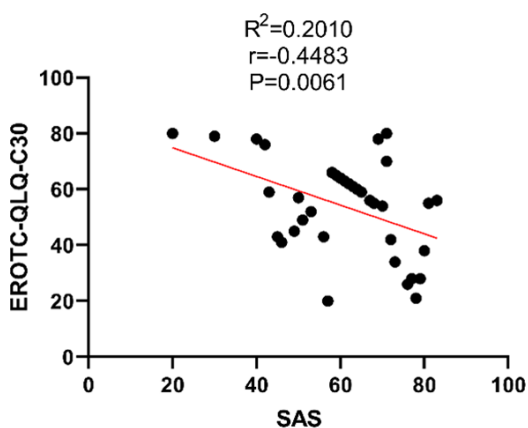


Figure 3. Correlation between the anxiety and quality of life in the cervical cancer patients undergoing postoperative chemotherapy. Our Spearman's correlation analysis found that the SAS scores were negatively correlated with the EROTC-QLQ-C30 scores ($r=-0.4483$, $P < 0.05$).

year is 53,000, accounting for about 18% of the global deaths from cervical cancer [16].

Through timely surgical operations and chemotherapy interventions, patients with cervical cancer can often achieve a better prognosis, and their survival times can be significantly prolonged [17]. However, clinical practice has found that cervical cancer can cause great physical and psychological pain among the patients and severely reduces the patients' quality of life [18]. The results of our long-term follow-up for patients with cervical cancer indicated that the survival times of patients with cervical cancer has been significantly prolonged due to the advances in the treatment methods, but the patients often bear a great psychological pressure after the surgery. Young patients and middle-aged patients with cervical cancer may become infertile due to the disease, causing an imbalance in their family or their social function, and it has a negative impact on their quality of life [19]. There was also a survey on patients with cervical cancer that showed that some patients undergoing hysterectomy for cervical cancer would have significant changes in their self-cognition and

role recognition. Some patients complained that they were discriminated against by others due to the disease, felt that their social or professional status was affected, and they had significant negative emotions [20]. Another study found that the average postoperative self-management ability score of cervical cancer patients was 60.39 ± 5.51 points, which is at a low level and significantly affects their quality of life and physical and mental health [21].

This study divided the patients into groups and carried out inter-group and intra-group comparisons before and after the intervention to explore the effects of the psychological nursing on the short- and long-term negative emotions and quality of life of the cervical cancer patients who underwent postoperative chemotherapy. The results showed that, after the intervention, the EROTC-QLQ-C30 scores of each item in the two groups increased significantly, and the differences before and after the intervention were significant, indicating that psychological nursing has effectively improved the patients' quality of life. A retrospective analysis of the patients with cervical cancer has found that most patients with cervical cancer are often at a lower quality of life due to their conditions or surgical treatment, which is specifically reflected in their poor sleep quality and poor body immunity, and the study also found that through targeted psychological interventions with the patients, the patients' scores on the SF-36 scale increased significantly, indicating that psychological care may help improve the patients' quality of life [22]. The authors of this paper analyzed the surgical treatments for cervical cancer, which include total hysterectomy, cervical conization, radical cervical resection, etc. The above treatments would more or less affect the patients' fertility, and the impairment of this physical function would cause significant changes in their self-cognition and role cognition [23]. What's more, the physical function of the patients would also change to a certain extent due to factors such as pain and surgery. The psychological interventions used in this paper were carried out from the perspectives of

The effect of psychological nursing on cervical cancer patients

marital relationships, role recognition reshaping, psychological counseling, and social support, which can help the patients accept themselves as soon as possible, get rid of their psychological dilemmas, and improve their quality of life [24].

The paper also took the patients' anxiety as an entry point to explore the impact of psychological intervention on the negative emotions of cervical cancer patients undergoing postoperative chemotherapy. The results showed that after the intervention, the proportion of mild anxiety on the SAS instrument in the study group was significantly lower than it was in the control group, and its long-term evaluation was also better than the control group. Some scholars have conducted an investigation on the psychological health status of patients with middle and advanced cervical cancer, and the results show that the somatization, compulsion, interpersonal sensitivity, anxiety, hostility and other factor scores in the SCL-90 of such patients were significantly reduced, with significant differences before and after the intervention, which is similar to the results of this study [25]. The authors of this paper believe that due to the particularity of the disease, cancer patients are often a group with a high incidence of psychological disorders. Anxiety is a kind of negative emotion that can affect the development of the treatment. We recommend carrying out targeted nursing interventions for anxiety patients to ensure the smooth progress of the clinical treatment. Some scholars have pointed out that the psychological interventions used in this paper can intervene in the patients undergoing chemotherapy after cervical cancer surgery from various perspectives such as social support, self-efficacy, and emotional function, which include the following aspects: alleviate patients' anxiety caused by the unknown through improving their health knowledge, relieve the patients' negative emotions through positive guidance, positive psychological suggestions and other measures, provide emotional support for the patients through social support, and achieve full coverage of the psychological interventions through one-on-one counseling [26]. All of the above have effectively alleviated the patients' anxiety. Some studies have pointed out that long-term negative emotions can affect the quality of life of individuals, which is consistent with the results of this study. The results in the paper

showed that the SAS scores were negatively correlated with the EROTC-QLQ-C30 scores, suggesting that it is feasible to improve the quality of life by alleviating patients' negative emotions.

In summary, the implementation of psychological intervention can help alleviate the short- and long-term negative emotions of cervical cancer patients undergoing postoperative chemotherapy. It helps to improve the patients' quality of life, and has a good feasibility, so we recommend carrying out its clinical promotion and application. The innovation of this survey lies in the selection of anxiety and quality of life as the observation indicators. Our quantitative data analysis demonstrates the feasibility of psychological intervention in the application of postoperative chemotherapy for cervical cancer patients, so it can provide a theoretical basis for the development of other studies. The shortcomings of this study are that the follow-up stopped at 90 days after the intervention, which is not the best time to stop the intervention, and this may have caused a waste of medical resources to some extent. What's more, due to the small sample size, this study lacks an analysis of the influences of the patients' occupations, pregnancy, childbirth, or other factors on the observed indicators.

Disclosure of conflict of interest

None.

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