

## Original Article

# Effects of bundled nursing combined with peer support on psychological state and self-efficacy of patients with cervical cancer undergoing chemotherapy

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**Abstract:** Objective: This study analyzed the effects of bundled nursing combined with peer support on psychological state and self-efficacy of cervical cancer patients undergoing chemotherapy. Methods: A total of 86 patients with cervical cancer undergoing chemotherapy who were hospitalized from July 2019 to July 2020 were enrolled as study subjects. According to the method of a random number table, the selected patients were divided into a control group and an observation group and each group contained 43 patients. The control group was treated with bundled nursing care, while the observation group underwent combining treatment of both bundled nursing as well as education supported by peers. The changes of psychological state, self-efficacy and health-related quality of life of patients before and after nursing intervention were compared. Results: The scores of depression and anxiety in two groups were remarkably decreased after intervention compared with prior-treatment, and the range of decrease in the observation group was critically greater than that in control group ( $P<0.05$ ). The self-efficacy scores of the two groups were substantially increased after nursing care, and the increase of the score in the observation group was critically higher than that in control group ( $P<0.05$ ). In addition, the health-related quality of life scores of the two groups increased remarkably after nursing, and the extent of increase in the observation group was notably greater than that in control group ( $P<0.05$ ). The degree of serum tumor markers CA125, CEA, CA199 and SCC-A in the observation group after intervention were notably lower than those in the control group ( $P<0.05$ ). Conclusion: The combinative practice of bundled nursing care and the supported education of peers can effectively improve the psychological status of cervical cancer patients with chemotherapy, and improve their self-efficacy and quality of life, which are all worthy of clinical promotion.

**Keywords:** Bundled nursing care, supported education of peers, cervical cancer, chemotherapy, psychological state, self-efficacy

## Introduction

Cervical cancer is the second largest threat to the health of females followed by breast cancer. According to domestic statistics, the annual number of new cases of cervical cancer is around 131,500 and the incidence rate is as high as 146/100,000. In addition, with the increasing pressure of social and work pressure of females, the age of patients tends to be younger [1, 2]. Chemotherapy, which is one of the dominating methods in treating cervical cancer, has a crucial effect in prolonging the survival period of patients. However, the course of chemotherapy usually has a long duration,

and patients may have serious adverse reactions such as nausea, emesis, alopecia or myelosuppression during the curative process [3]. Patients often endure long-term pain and mental pressure, leading to different degrees of depression, anxiety and other negative psychology during chemotherapy and thus affecting their quality of life. Some patients even experience a decline in self-efficacy, which in turn imposes adverse effects on the cure of the disease [4, 5]. Therefore, it is extremely crucial to provide effective nursing intervention during chemotherapy for patients with cervical cancer. Our hospital implemented the combining practice of bundled nursing care and supported

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education of peers for cervical cancer patients undergoing chemotherapy treatment, from July 2019 to July 2020, and achieved relatively satisfactory results. The report is as follows.

## Materials and methods

### *Research subjects*

A total of 86 patients with cervical cancer who underwent chemotherapy in our hospital from July 2019 to July 2020 were enrolled as study subjects. According to a random number table, the selected patients were divided into a control group and an observation group and each group contained 43 patients. The study was approved by the ethics committee of our hospital.

### *Inclusive and exclusive criteria*

Inclusion criteria included: (1) Patients diagnosed as having cervical cancer by imaging examination and histopathology; (2) Patients who were not living alone; (3) Patients that were conscious and mentally normal, and had certain cognitive and language competence; and (4) Patients who voluntarily participated in chemotherapy treatment and signed the informed consent.

Exclusion criteria included: (1) Patients with other malignant tumors; (2) Patients with serious diseases of the heart, liver, kidney or other core organs; (3) Patients during pregnancy or lactation; or (4) Patients who withdrew during treatment.

### *Methods*

The control group received bundled nursing care, and the specific procedures were as follows: (1) A working team of bundled nursing was set up, including 1 chief physician, 1 chief nurse and 3 nurses. The chief physician was responsible for the assessment of the patients' condition with cervical cancer and the formulation of the chemotherapy plan; the chief nurse was responsible for the formulation of a reasonable caring program and the training of nurses; and the nurses were responsible for the implementation of the caring program. (2) The implementation of healthy education. The basic knowledge of cervical cancer, disease risk factors, dietary restrictions, treatment and

prognosis of chemotherapy were introduced to patients through the distribution of health knowledge brochures and looped video material. The working group emphasized to patients that timely and reasonable chemotherapy is conducive to prolong survival period, and introduced in detail the possible adverse reactions and countermeasures during chemotherapy. (3) Psychological interventions. The nurses trained in nursing psychological knowledge conducted communication with patients, answered their questions in real time, and provided comfort and encouragement. At the same time, the working group shared inspirational cases with patients to stimulate their desire for survival, so that they can cooperate more actively with treatment. (4) Nursing care of chemotherapy complications. Chemotherapy drugs have toxic side effects and can cause varying degrees of damage to the liver, kidney or other organ functions. Therefore, the patients were encouraged to increase the amount and frequency of drinking water to speed up the elimination of drugs, thus reducing the side effects of chemotherapy drugs. Patients were instructed to improve their dietary structure to reduce gastrointestinal adverse reactions; and we guided the patients to strengthen their self-protection awareness to reduce the risk of infection. (5) Home care guidance after chemotherapy. The team members communicated with the family members of patients and gained their understanding and support. In the meanwhile, they improved the patients' social support system, gave care and understanding during the illness, and helped them keep a stable mood. (6) Periodic return visits. The nurses made regular return visits to the patients, and urged them to carry out regular reviews and insisted on the follow-up chemotherapy plan.

The observation group was cared for with supported peer education in addition to the bundled nursing care in the control group. The specific implementation was as follows: (1) Based on the principle of voluntary participation, 15 cervical cancer patients who recovered from our hospital and with good language and interpersonal communication skills were selected as peer supporters. The peer supporters were trained by the chief nurse with cervical cancer knowledge, personal care theory and communication skills. The purpose of training was to improve the skills of peer supporters. (2) The

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peer supporters were numbered, and one of them was selected from the observation group for communication and interaction by telephone, WeChat and QQ. During the communication and interaction, the peer supporters answered the patients' questions in real time, and gave corresponding psychological counseling to the patients' psychological problems that were raised during the communication. Humanistic care was given to patients to help them face their illness, and establish a positive and optimistic attitude toward the treatment and life. By telling their individual experiences, peer supporters encouraged the patients to build confidence in overcoming the disease.

### *Observation of indexes*

Comparison of the changes of the psychological state of the two groups before and after nursing care. We evaluated the psychological state of patients with cervical cancer before and after chemotherapy by a Self-rating depression scale (SDS) [6] and a Self-rating Anxiety Scale (SAS) [7]. The critical score of the SDS scale was 53 points, of which a score between 53-62 points was mild depression, a score of 63-72 points was moderate depression, and 73 points or over was severe depression. The critical score of the SAS scale was 50 points, of which the mild anxiety scored 50-59 points, moderate anxiety scored 60-69 points, and severe anxiety scored over 70 points.

The changes of self-efficacy before and after nursing were compared between the two groups. The assessment was conducted by the General Self-Efficacy Scale (GSES) [8]. The scale consisted of 10 items with a 4-level scoring method and total score of 10-40 points. A higher score referred to better general self-efficacy of patients.

The quality of life before and after nursing was compared between the two groups, and the evaluation of quality of life was by SF-36 [9]. The scale contained 4 dimensions, the physical functioning (5 factors), social functioning (5 factors), psychological functioning (5 factors), and material life status (4 factors). We adopted a 5-level scoring method, and the higher score revealed a better quality of life of cervical cancer patients after chemotherapy.

The fasting venous blood of patients was collected with a volume of 3-7 ml before and after intervention. The levels of serum carcinoembryonic antigen (CEA), carbohydrate antigen

(CA125), carbohydrate antigen (CA199) and squamous cell carcinoma antibody (SCC-A) were detected by AU5800 automatic biochemical analyzer (Beckman Coulter Co., Ltd.) and electrochemiluminescence immunoassay.

### *Statistical analysis*

The analysis of the data was processed by SPSS 19.0. The measurement data were expressed by  $(\bar{x}\pm s)$ , the comparison of measurement data was by *t*-test, the count data were expressed by percentage and the results were expressed by  $\chi^2$  test. A statistically significance of difference was set at  $P<0.05$ .

## Results

### *Clinical materials*

The control-group of patients was aged between 35 and 71 years old, with an average of  $58.24 \pm 4.17$  years. The course of disease ranged from 2-13 months, and the mean course of disease was  $(5.74 \pm 1.15)$  months. There were 20 cases of adenocarcinoma, 15 cases of squamous cell carcinoma and 8 cases of adeno-squamous carcinoma. The average age of the observation group was  $(59.66 \pm 3.42)$  years old, ranging from 34 to 72 years old. The course of disease ranged from 2-13 months, with an average duration of  $(5.38 \pm 1.21)$  months. The pathological types were classified as 22 cases of adenocarcinoma, 14 cases of squamous cell carcinoma and 7 cases of adeno-squamous carcinoma. The comparison difference of general data such as age, fibroids diameter, and fibroids location between the two groups of patients was statistically insignificant ( $P>0.05$ ) and as such the groups were comparable (**Table 1**).

### *Comparison of psychological state changes before and after nursing care in the two groups of patients*

The scores of depression and anxiety in both groups were remarkably decreased after intervention compared with prior-treatment, and the range of decrease in the observation group was critically greater than that in control group ( $P<0.05$ ) (**Figure 1**).

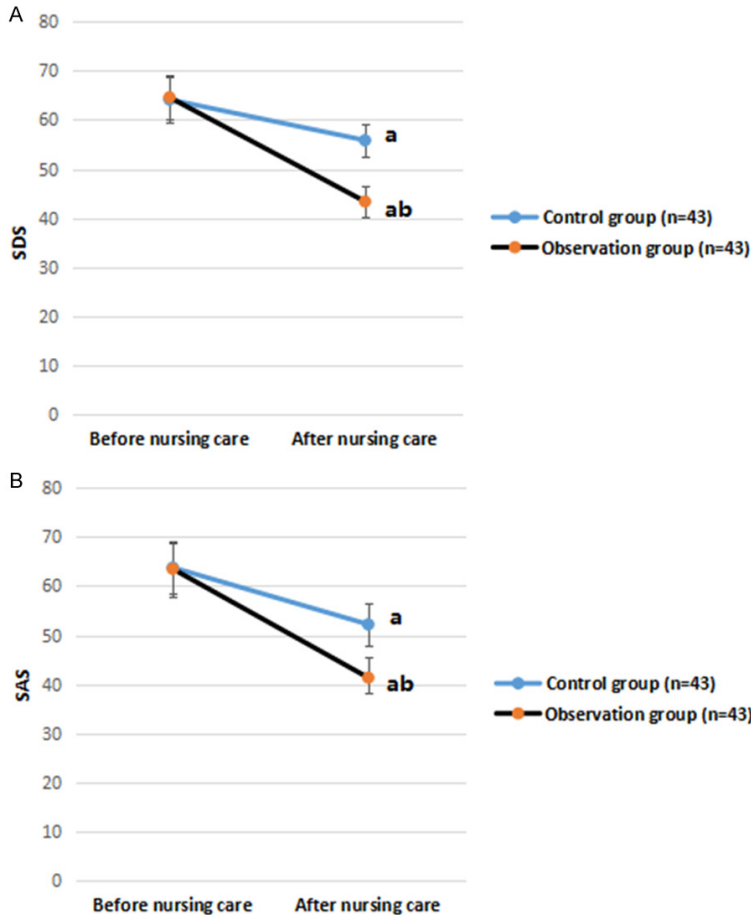
### *Comparison of self-efficacy changes before and after nursing care in both groups of patients*

The self-efficacy scores of the two groups were substantially increased after nursing care, and

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**Table 1.** Comparison of general information between the two groups of patients

Item	Control group (n=43)	Observation group (n=43)	$\chi^2/t$	P
Age ( $\bar{x}\pm s$ , years old)	58.24 $\pm$ 4.17	59.66 $\pm$ 3.42	1.7266	0.0879
Course of disease ( $\bar{x}\pm s$ , month)	5.74 $\pm$ 1.15	5.38 $\pm$ 1.21	1.4142	0.1610
Pathology subtypes			0.1964	0.9265
Adenocarcinoma	20	22		
Squamous cell carcinoma	15	14		
Adeno-squamous carcinoma	8	7		



**Figure 1.** Comparison of psychological state changes before and after intervention in two groups of patients. Note: (A) SDS; (B) SAS. Compare with before nursing care, <sup>a</sup>P<0.05; Compare with control group, <sup>b</sup>P<0.05.

the increase in the score in the observation group was critically higher than that in the control group with a statistically significant difference ( $P<0.05$ ) (Figure 2).

### Comparison of quality-of-life changes before and after nursing in both groups of patients

The health-related quality-of-life scores of the two groups increased remarkably after nursing,

and the extent of increase in the observation group was notably greater than that in the control group with a statistically significant difference ( $P<0.05$ ) (Figure 3).

### Comparison of serum tumor marker degree before and after intervention

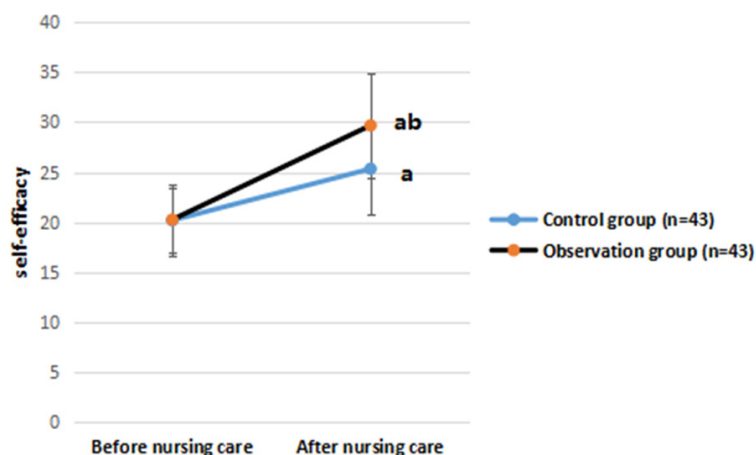
The serum tumor markers CA125, CEA, CA199 and SCC-A of the two groups of patients after intervention were remarkably less than those before intervention ( $P<0.05$ ), and the degree of the observation group were substantially lower than those of the control group ( $P<0.05$ ) (Table 2).

### Discussion

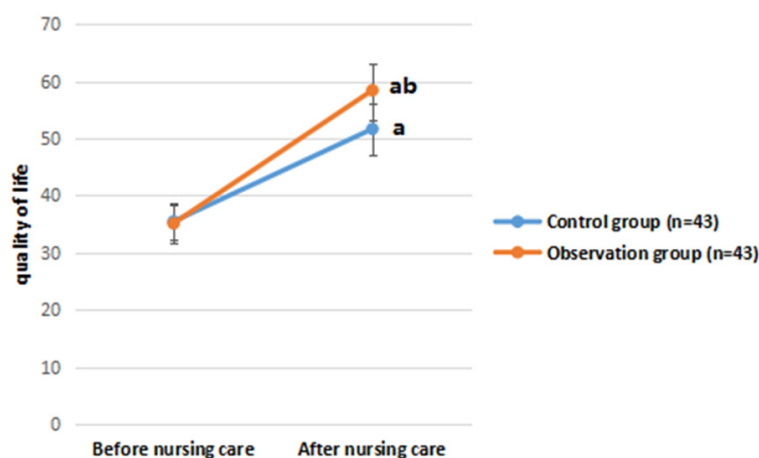
Cervical cancer is a common malignant tumor of the female reproductive tract. Chemotherapy is one of the important strategies for the treatment of cervical cancer, which kills cancer cells through chemical drugs, alleviates clinical symptoms of patients and thereby prolongs survival [10]. Studies

have shown that cisplatin-based concurrent chemotherapy reduces the risk of mortality of cervical cancer patients by 30%-50%, and prognosis can be substantially improved [11, 12]. However, as chemotherapy drugs belong to cytotoxic drugs, they can also damage normal cells while killing the cancer cells. After long term chemotherapy, varying degrees of toxic side effects can occur, with common digestive system reactions including nausea, emesis,

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**Figure 2.** Comparison of self-efficacy changes before and after nursing intervention between the two groups. Note: Compare with before nursing care, <sup>a</sup>P<0.05; Compare with control group, <sup>b</sup>P<0.05.



**Figure 3.** Comparison of changes in quality of life before and after nursing care between the two groups. Note: Compare with before nursing care, <sup>a</sup>P<0.05; Compare with control group, <sup>b</sup>P<0.05.

coprostasis and diarrhea, myelosuppression such as thrombocytopenia and leukopenia, impaired liver/kidney function and hair loss, etc. [13, 14]. Patients with cervical cancer usually suffer from psychological pressure and physical pain due to the adverse reactions of chemotherapy and the suffering from the disease itself. According to the relevant surgeries, cervical cancer patients are prone to despair, paranoia, irritability, anxiety, depression and other negative emotions, which leads to a decrease of enthusiasm and cooperation for treating of chemotherapy, and this greatly affects the therapeutic effect [15].

Bundled nursing care is a method that adopts a series of evidence-based nursing measures to deal with refractory diseases in clinic practice. It improves the quality of care and the prognosis of patients by systematically implementing simple and clear nursing measures [16]. At present, bundled nursing care is mostly applied to emergency medicine [17], hemodialysis [18], prevention of neonatal respiratory-related pneumonia [19], malignant tumors [20, 21] and other clinical medical diseases, and it has achieved good practicing results. However, as the implementers of care medical staff who have limited resonance with the physical and mental feelings of patients may ignore the subtle psychological changes of the patients. As a new nursing mode, peer supported education refers to a form of care which gathers people with the same situation and shares treatment experience together, and reaches the purpose of peer education [22, 23]. Peer supported education has been widely applied in the treatment of major diseases [24, 25], but there are few studies in cervical cancer patients. In this study, patients who have been cured of cervi-

cal cancer were selected as the peer supporters. Compared with nurses, peer supporters can better understand the physical and mental feelings of patients with cervical cancer undergoing chemotherapy, and can give the patients great encouragement and support through their personal successful anti-cancer experiences. During the process of communicating with patients, the peer supporters can keenly discover the psychological burden of patients and provide counseling, and then help the patients to build confidence in overcoming the disease. Through the understanding of successful cases, patients can increase their hope

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**Table 2.** Comparison of serum tumor marker degree between the two groups before and after treatment ( $\bar{x} \pm s$ )

Group	Time	CA125 (IU/ml)	CEA (ng/L)	CA199 (IU/ml)	SCC-A ( $\mu\text{g/ml}$ )
Observation group (n=43)	Before intervention	55.47 $\pm$ 7.59	44.27 $\pm$ 4.22	47.56 $\pm$ 6.51	1.30 $\pm$ 0.27
	After intervention	35.67 $\pm$ 5.62*	30.48 $\pm$ 3.25*	31.28 $\pm$ 5.47*	0.97 $\pm$ 0.15*
	t	12.748	16.977	12.555	7.006
	P	<0.001	<0.001	<0.001	<0.001
Control group (n=43)	Before intervention	56.39 $\pm$ 8.10	43.93 $\pm$ 5.40	48.29 $\pm$ 7.42	1.35 $\pm$ 0.33
	After intervention	43.23 $\pm$ 6.44	35.64 $\pm$ 4.02	36.20 $\pm$ 4.65	1.07 $\pm$ 0.18
	t	8.339	8.075	9.054	4.885
	P	<0.001	<0.001	<0.001	<0.001

Note: Compared with the control group, \* $P < 0.05$ .

for a new life and expectation for the future, thus increasing the degree of cooperation for treatment, and therefore recover quickly. The results showed that after the combined nursing care, the scores of depression and anxiety in the observation group were critically lower than those in the control group, and the scores of self-efficacy and quality of life in the observation group were remarkably higher than those in the control group. This indicated that the bundled nursing case and peer-supported education have consideration of the patients' perspective. It helps to provide care for the patients' psychological states, and promptly eases the psychological problems to help improve the patients' self-efficacy, thus improving the quality of life.

Since the sample size included in this study is limited, and the main mechanisms that may affect the disease have not been studied in depth, the results of the study may be biased, which indicates that further in-depth research is required in the future.

To conclude, the combinative practice of bundled nursing care and supported education of peers can effectively improve the psychological status of cervical cancer patients with chemotherapy, and improve their self-efficacy and quality of life, which is worthy of clinical promotion.

### Disclosure of conflict of interest

None.

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