Int J Clin Exp Med 2020;13(2):1299-1306
www.ijcem.com /ISSN:1940-5901/IJCEM0094062

Original Article

Rehabilitation and quality of life improvement of patients with esophageal carcinoma surgery by psychological intervention

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Received March 19, 2019; Accepted January 7, 2020; Epub February 15, 2020; Published February 28, 2020

Abstract: Objective: To study the influence of psychological intervention on the rehabilitation and quality of life of patients with esophageal carcinoma (EC) surgery. Methods: 130 patients receiving EC surgery were enrolled as subjects. They were randomly divided into the intervention group (n=65) receiving conventional intervention combined with psychological intervention and the control group receiving conventional nursing (n=65). The self-rating depression scale (SDS), the self-rating anxiety scale (SAS), the visual analogue scale/score (VAS), the 36-item short form questionnaire (SF-36) and the nursing satisfaction of the two groups of patients were compared before and after the nursing care. Result: The scores of SAS and SDS in the intervention group were significantly lower than those in the control group after the nursing care (P<0.05). The score of VAS in the control group was significantly higher than that in the intervention group after the nursing care (P<0.05). The two groups exhibited no significant difference in SF-36 scores at the time of admission to the hospital but significant difference after the nursing (P<0.05). The satisfaction of patients in the control group was significantly lower than that of the intervention group (P<0.05). Conclusion: The psychological intervention is of significant clinical efficacy on the rehabilitation and quality of life improvement of the EC patients.

Keywords: Psychological intervention, esophageal carcinoma, quality of life

Introduction

The incidence and mortality of malignant tumors are gradually increasing and the patients suffering from malignant tumors trend to be younger than ever [1]. Studies demonstrated that [2] the new cancer cases in US Cancer Database exceeded 1.6 million and the death cases were close to 0.6 million in 2016. The esophageal carcinoma (EC) ranks the 8th in terms of incidence among all the global malignant tumors and most patients with EC are from developing countries [3]. There were studies showing that [4, 5] EC occurs predominantly in Asia, of which China was the country with the highest incidence in the world. Currently, EC is principally treated with radiotherapy, chemotherapy and surgeries, etc., among which, the surgical operation was the major option [6].

Due to the poor knowledge of patients on EC, the negative emotions such as psychological pressure and depression will be aggravated during the whole treatment process, which affects the therapeutic effect and prognosis of the patients [7]. the conventional nursing has failed to satisfy the clinical demand and the patients require more for the quality and level of nursing [8]. The psychological intervention refers to that the nursing staff actively affect the psychological state of patients through various methods during the whole nursing process so as to assist the patients achieve the optimal physical and psychological state [9]. A study showed that [10] the appropriate psychological intervention in addition to the conventional care enables to alleviate the negative emotion and psychological stress of patients and simultaneously upgrade the quality of nursing care during the whole treatment process. Zhao et al. [11] found that the psychological intervention significantly improves the depression, anxiety and post-caring rehabilitation of gastric cancer patients. However, whether the recovery of EC patients will be significantly improved is not known.

Therefore, this study was to observe the influence of psychological intervention on the rehabilitation of EC patients and provide a reference for clinical professionals.

Materials and methods

130 EC patients receiving thoracic surgery were enrolled as the subjects. All the patients were diagnosed as EC by the pathological biopsy. They were randomly divided into the control group (n=65) receiving conventional nursing and the intervention group (n=65) who were given psychological intervention in addition to conventional nursing. The control group including 26 females and 39 males with the age range of 35-68 years old and the average age of 55.33±6.31 years old while there were 65 patients in the intervention group including 21 females and 44 males with the age range of 40-76 years old and the average age of 55.14± 5.69 years old. This study was approved by the ethics committee of the hospital.

Inclusion and exclusion criteria

Inclusion criteria: Adult patients diagnosed with esophageal carcinoma [6] and are scheduled for surgery. All the patients and their family members were informed the purpose of the study and signed the informed consent.

Exclusion criteria: Patients with a history of myocardial infarction in past three months. Patients with congenital immunodeficiency and congenital hereditary disease. Patients with multiple organ damage or functional failures. Patients diagnosed with other tumors, cognitive disability or other mental disorders or having incomplete clinical data or poor compliance to the treatments were excluded.

Nursing

The conventional nursing care is as follows: the medication advice of the doctors was followed; sufficient preoperative practice was made to instruct the patients on sputum excretion, cough and bed defecation, etc. The conventional nursing care for post general anesthesia was conducted, the thoracic closed drainage was kept unobstructed, the color, appearance and quantity of the drainage fluid were observed and the nursing care operation was well recorded; the gastrointestinal tract was kept unblocked and the nasal feeding tube was prevented from falling off; the patients additionally receiving chemotherapy were informed of the purpose of the therapy and the common adverse reactions; the health education about postoperative complications was given to the patients.

In addition to the conventional nursing care, the patients in the intervention group were also given the personalized psychological intervention based on the living environment, educational background, social role and personality of each patient as follows: (1) Preoperative care: because of the progressive dysphagia, weakness and less confidence in the surgery of patients, a well trusted relationship between the medical workers and the patients was established. The nursing staff listened to the patients patiently and sympathetically and gave appropriate comfort during the physical contact with the patients, communicated more with the patients, listened to the internal needs of the patients and gave patients knowledge of EC as well as answer questions of the patients and their families patiently so as to help them face the diseases, eliminate the fear to the disease and cooperate with the surgery treatment actively. The duration required for the entire operation was informed to the patients so as to relief their preoperative anxiety and worry. (2) Postoperative care: ① the woken patients were returned to the general ward for recovery after surgery, the duration of the operation was informed to the patients and the encouragement was given to the patients during the whole operation process. ② The condition of wound and the feeling of pain on the surgical incision were paid close attention, the pain of the patients was evaluated, and the pain killer was properly given so as to relieve the anxiety caused by pain. ③ Patients who were additionally given the postoperative radiotherapy and chemotherapy may lose their hair, in this case, the nursing workers communicated timely with them to relieve their worries and anxieties. The wigs were also be recommended. The outdoor walking or recreational activities were organized if the condition of the patients had been improved properly so that the optimal physical and mental status of the patients was maintained during the radiotherapy and chemotherapy. ④ The condition of the patients was closely observed and the improvement was shared with the patients so as to help the patients establish the confidence in active treatment.

Nursing and interventions begin with esophageal cancer surgery until patients were discharged, and no intervention was required after discharge.

Outcome measures

Primary outcome measures: Before treatment and 14 days after the operation, the self-rating depression scale (SDS) [12] including 20 items in two groups was recorded. The higher the score was, the more depressed the patient would be; the self-rating anxiety scale (SAS) [13] including 20 items in each of the two groups was observed, and the higher the score was, the more anxious the patient would feel; the visual analogue scale/score (VAS) [14] was measured with the total scores of 10 and the higher the score was, the more painful the patient would be.

Secondary outcome measures: before treatment and 14 days after the operation, the short form 36 questionnaire [15] was used to evaluate the patients. The higher the score (except BP) was, the higher the quality of life of the patients would be. The nursing satisfaction was divided into 3 levels including very satisfied, satisfied, and not satisfied. Satisfaction rate = (very satisfied patients + satisfied patients)/ total patients ×100%.

Statistical analysis

In this study, the collected data was statistically analyzed with SPSS20.0 software and plotted by GraphPad Prism 7. The counting data was expressed with rate (%) and compared by the chi-square test. The ranked data was compared by rank sum test, indicated by Z. The measurement data was expressed with mean± standard deviation (Mean±SD). For intragroup before-after comparison, pairwise t test was used; for between-group comparison, independent t test was used. $P<0.05$ indicated statistical difference.

Results

Baseline clinical data analysis of the two groups of patients

The two groups exhibited no statistically significant difference in baseline clinical data ($P>0.05$) (**Table 1**).

Preoperative and postoperative SAS and SDS in both groups

The depression and anxiety rating results before and after nursing of the two groups displayed that the SAS and SDA scores at admission of patient between the intervention group and the control group were not significantly different ($P>0.05$); the SAS and SDS scores after psychological care in the intervention group were significantly decreased compared to those in the control group ($P<0.05$) (**Table 2** and **Figure 1**).

VAS scores before and after nursing in both groups

The VAS scores before and after the nursing care of the two groups of patients displayed that the pre-caring VAS scores between the two groups were not significantly different ($P>0.05$) and the post-caring VAS score of the control group was significantly higher than that of the intervention group ($P<0.05$) (**Table 3** and **Figure 2**).

Comparison of post-nursing satisfaction between two groups of patients

The nursing satisfaction of the patient was evaluated, and the result showed that the nursing satisfaction of the control group was significantly lower than that of the intervention group ($P<0.05$) (**Table 4**).

SF-36 scores before and after nursing between the two groups of patients

The SF-36 scores of the two groups of patients before and after nursing care demonstrated that the SF-36 scores between the intervention group and the control group were not statistically different ($P>0.05$); the SF-36 score after psychological nursing care in the intervention group was significantly higher than that of the control group ($P<0.05$) (**Table 5**).

Discussion

The EC at earlier stage is treated principally by surgical therapy, however, most patients are feared of the surgery due to the lack of knowledge on surgical treatment and consequently the treatment efficacy and prognosis were negatively affected [16]. The conventional nursing

Table 1. Clinical data of two groups of patients

	Control group (n=65)	Intervention group (n=65)	t/X^2 value	*P* value
Sex			0.833	0.361
Male	26 (40.00)	21 (32.31)		
Female	39 (60.00)	44 (67.69)		
Age (years)	55.33±6.31	55.14±5.69	0.176	0.860
BMI (kg/m^2)	22.92±1.72	22.35±1.84	1.790	0.076
History of hypertension			1.840	0.175
Yes	50 (76.92)	56 (86.15)		
No	15 (23.08)	9 (13.85)		
Diabetes mellitus			0.132	0.716
Yes	42 (64.62)	40 (61.54)		
No	23 (35.38)	25 (38.46)		
Smoking history			0.300	0.584
Yes	25 (38.46)	22 (33.85)		
No	40 (61.54)	43 (66.15)		
History of alcoholism			0.192	0.661
Yes	12 (18.46)	14 (21.54)		
No	53 (81.54)	51 (78.46)		
Degree of education			0.036	0.850
> junior middle school	20 (30.77)	21 (32.31)		
< junior middle school	45 (69.23)	44 (67.69)		
TNM staging			0.502	0.479
I	39 (60.00)	35 (53.85)		
II	26 (40.00)	30 (46.15)		
Operative time	170.22±32.05	175.29±30.84	0.370	0.900
Intraoperative bleeding volume	165.24±31.84	163.84±38.72	0.221	0.825
Intraoperative blood transfusion			0.208	0.648
Transfusion	3 (4.62)	2 (3.08)		
No blood transfusion	62 (59.38)	63 (69.92)		

Table 2. Changes of SAS and SDS scale scores before and after nursing care

Group	SAS				SDS			
	Before nursing care	After nursing care	t	P	Before nursing care	After nursing care	t	P
Control group (n=65)	51.25±4.36	31.58±3.39*	28.714	<0.001	48.65±5.35	33.62±4.65*	17.095	<0.001
Intervention group (n=65)	51.08±4.72	17.95±3.02*	47.667	<0.001	47.91±5.46	19.44±4.04*	33.794	<0.001
t	0.213	24.204			0.78	18.559		
P	0.831	<0.001			0.437	<0.001		

*P<0.05 compared with that before nursing care.

care has failed to satisfy the needs of patients; therefore, a more humanistic nursing care is necessary to be performed during the whole medical treatment process. The psychological nursing care is a biological-psychological-social medical model that lays emphasis on the inner feelings of the patients, which will significantly improve the negative emotions of patients such as depression, anxiety and fear during the treatment, promote the compliance and efficacy of the treatment process as well as benefit the postoperative rehabilitation [17, 18]. Studies have shown that [19] the psychological nursing care has significantly improved the anxiety and depression of patients during the lung cancer treatment process, however, its efficacy on the treatment of EC is not clear yet. Therefore, this study was carried out to investi-

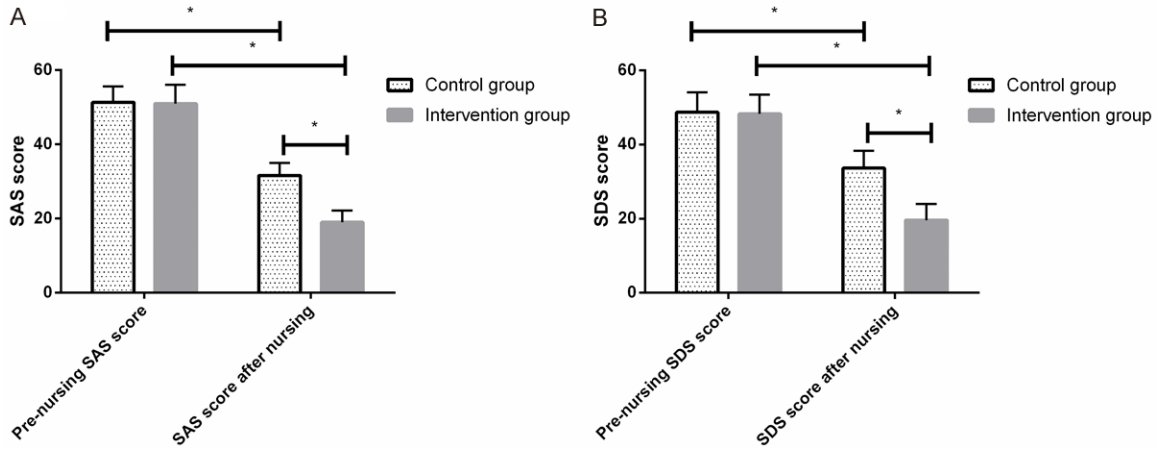

Figure 1. The scores of SAS and SDS scale before and after nursing in group A were not different before and after nursing (P>0.05), but there was significant difference between the two groups in SAS after nursing (P<0.01), and SAS control group after nursing. There was no significant difference in SDS between the two groups before nursing (P>0.05), and there was significant difference between the two groups after nursing (P<0.01), and the SDS in the control group after nursing was significantly higher than that in the intervention group (P<0.05). *indicates that there is a difference between the two groups (P<0.05).

Table 3. Score of VAS scale before and after nursing in two groups

Group	Before nursing care	After nursing care	t	P
Control group (n=65)	7.23±1.54	4.52±1.39*	10.532	<0.001
Intervention group (n=65)	7.20±1.62	2.49±0.86*	20.704	<0.001
t	0.108	10.013		
P	0.914	<0.001		

Note: *showed significant difference compared with pre Nursing (P<0.01).

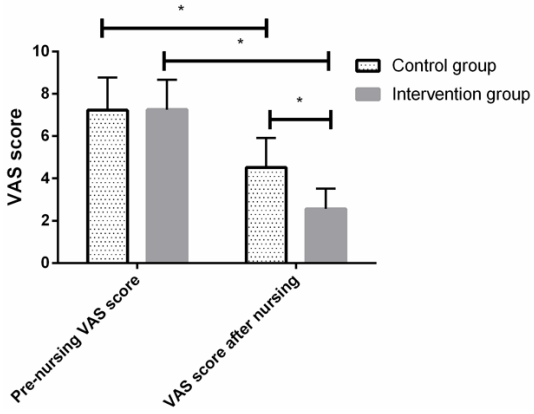

Figure 2. There was no difference in VAS score before and after nursing between the two groups (P>0.05). The VAS score in the control group was significantly higher than that in the intervention group (P<0.05). * indicated there was a difference between the two groups (P<0.05).

gate the impact of psychological intervention on the quality of life of patients receiving EC surgery.

In this study, we discovered by comparing the different nursing methods in the control group and the intervention group that the SAS and SDS scores in the intervention group were significantly higher than those in the control group with statistical difference. In Teng's [20] article, it was reported that the psychological nursing care significantly improved the postoperative SAS and SDS scores, which proved that the psychological nursing care would significantly improve the postoperative anxiety and depression of patients with esophageal cancer because the patients were assisted to recognize the disease occurrence laws and relieve the fears, instructed to actively cooperate with the treatment and told many successful cases so as to build the confidence and establish the good doctor-patient relationship. For the psychological needs of patients in different periods, the humanistic solicitude are combined in the psychological intervention to actively ease the doubts of the patients, organize the patients to take outdoor walks or activities under proper physical conditions and help the patients establish a healthy and active mentality so as to relieve the disease induced depression significantly [21]. Nevertheless, we rated SF-36 scales and compared the scores of the two groups. The SF-36 was used to establish a

Table 4. Comparison of nursing satisfaction between two groups of patients after nursing

Group	Very satisfied	Satisfied	Not satisfied	Z	*P* value
Control group (n=65)	15 (23.08)	25 (38.46)	25 (38.46)	-2.062	0.039
Intervention group (n=65)	22 (33.85)	29 (44.62)	14 (21.54)		

Table 5. Scores of SF-36 scale before and after nursing in two groups

Factor	Control group (n=65)		t	P	Intervention group (n=65)		t	P
	Before nursing care	After nursing care			Before nursing care	After nursing care		
Physiological function	62.35±12.28	72.65±13.25	4.597	<0.001	62.75±13.46	84.04±12.72*	9.268	<0.001
Role-function	51.33±12.69	63.88±11.58	5.982	<0.001	50.52±11.45	72.78±12.52*	10.578	<0.001
Bodily Pain	58.48±13.58	47.62±12.52	4.740	<0.001	57.75±13.59	39.56±12.04*	8.077	<0.001
General Health	56.39±11.32	62.36±12.68	2.832	0.005	56.58±12.27	78.22±12.05*	10.145	<0.001
Vitality	46.62±12.84	55.68±13.54	3.915	<0.001	47.40±12.50	63.95±11.25*	7.934	<0.001
Social Functioning	65.59±15.24	71.36±13.84	2.260	0.026	66.59±14.95	88.33±12.38*	9.030	<0.001
Role-Emotional	59.18±13.66	65.84±12.52	2.898	0.004	60.06±13.35	78.72±12.47*	8.235	<0.001
Mental Health	53.66±11.35	65.84±12.83	5.733	<0.001	54.52±12.71	76.75±11.52*	10.448	<0.001

Note: *indicated comparison with the control group after nursing (P<0.01).

spectrum of quality of life so as to reflect the quality of life of people with different diseases, including physical function, physical role, body pain, total health status, vitality, social function, emotional role and mental health, 8 areas in total [22]. Studies found that the score of each item in SF-36 scale at admission was not significantly different between the intervention group and the control group (P>0.05). The SF-36 score after psychological nursing in the intervention group was significantly different from that in the control group after the psychological intervention (P<0.05), which indicated that the psychological intervention was effective to the patients. The VAS of two groups of patients after nursing care showed that the suffering of pain in the intervention group was also significantly reduced. The study of Liu [23] showed that the psychological nursing care improved the quality of life and relieved the pain of patients, which was consistent with our study and showed that the psychological care would take effect not only in liver cirrhosis but also in esophageal cancer. With the healing of wounds after nursing care, most patients will suffer incisional pain, and some patients who are more sensitive to pain maybe intolerant to the pain. In this case, we shall communicate with patients, play light music to distract attention of patients and apply painkillers appropriately to relieve the pain. Regarding the patients in the control group without psychological intervention, the score on wound pain was generally higher, which concluded that the psychological intervention would significantly alleviate the pain and improve the quality of life of patients.

Although this study demonstrates that psychological intervention does have a certain effect on postoperative patients with esophageal cancer, we still have some limitations in this study. First, the psychological intervention was not performed by the specilized personnel and the long-term follow up was not carried out. The psychological state evaluation is still subjective, and secondly, this study did not explore whether the patient's prognosis has been affected or improved, so we hope to further analyze the impact of psychological intervention on the prognosis in the future, and obtain more in-depth results.

In summary, the psychological intervention has significant clinical efficacy on rehabilitation and improvement of quality of life of EC patients, enables to effectively improve the depression and anxiety, alleviate the physiological and psychological pain and effectively increase the nursing satisfaction as well as upgrade the quality of life of patients. Therefore, it is worthy of extensive clinical promotion.

Acknowledgements

This work was supported by Inner Mongolia Autonomous Region Health and Family Planning

Commission Medical and Health Planning Research Project.

Disclosure of conflict of interest

None.

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