

Anxiety and Depression Symptoms Among Ovarian Cancer Patients in Western China: A Cross-Sectional Study

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Abbreviations: HADS: Hospital Anxiety and Depression Scale; SCSQ: Simplified Coping Style Questionnaire; SDS: Self-rating Depression Scale; BDI: Beck Depression Inventor; GDS: Geriatric Depression Scale; HAMD: Hamilton Depression Rating Scale

ABSTRACT

Background: It is well known that cancer patients tend to have different degrees of depression and anxiety. However, there are few studies focus on the association between symptoms of depression and anxiety among ovarian cancer patients and their coping styles in western China. In this study, we aim to investigate the prevalence of cancer-related depression and anxiety in western China among patients with ovarian cancer, and analyze their influencing factors, to provide clinical guides for psychological interventions.

Objects and Methods: In this prospective, cross-sectional study, qualified patients were asked to fill in these questionnaires, including Hospital anxiety and depression scale (HADS) and Simplified Coping Style Questionnaire (SCSQ). Multivariate analysis and binary logistic regression analysis were used to test the associations among symptoms of depression and anxiety, coping styles and influencing factors.

Result: A total of 270 questionnaires were distributed in a 3rd-grade women and children hospital of Chengdu since March 1, 2016 to March 1, 2017. All participants in our study were ovarian cancer inpatients and all questionnaires were valid for analysis. The prevalence of depression and anxiety in ovarian cancer patients were 47.03% and 57.77%, respectively. 90.38% of cancer-related anxiety and 91.33% of cancer-related depression were both mild. Chi-square test showed there were statistically significant differences ($P<0.05$) in the fields of education level and income. But age, marital status, medical costs and cancer stage were not significantly correlated with the prevalence of depression and anxiety ($P<0.05$). T test showed cancer-related depression and anxiety were associated with coping style, the difference had statistical significance ($P<0.05$). Furthermore, the multivariate analysis showed that education and coping style were the independent influencing factors of both cancer-related depression and anxiety.

Conclusion: The present study suggested that about half of ovarian cancer patients were with depression and anxiety symptoms. The majority of the cancer-related depression and anxiety were mild. Educational level and coping style should be considered during the interventions of cancer-related depression and anxiety.

Introduction

Ovarian cancer has the highest fatality rate among gynecological oncology in developed countries [1], also in China [2]. All over the

world, ovarian cancer was diagnosed in nearly 225,000 women and was responsible for estimated 140,100 deaths in 2017[3].

Meantime, the prevalence and mortality of ovarian cancer varies from different countries. It was estimated that, in the United States, 21,200 women are diagnosed with ovarian cancer, and 14,300 die from the disease each year, approximately [4]. In Australia, it was forecasted that near 1480 women would be diagnosed with ovarian cancer, and 1040 cases would die from this disease [5]. And the highest number of deaths (34,575 deaths) [6] caused by ovarian cancer were found in Asian and China, with 110,526 diagnoses. The five-year survival rate is nearly 90% in early stage, but only 30% in advanced stage [7]. However, it's difficult to diagnose ovarian cancer at early-stage(I / II) due to the nonspecific symptoms, and there is no recommended screening test. So, the majority of ovarian cancer patients are diagnosed at advanced stage. In Poland, as many as 42.5% of patients with adenocarcinoma were diagnosed in stage IV [8].

As the high diagnosis rate of advanced-stage and high mortality of the disease, patients who are suffering ovarian cancer have to tolerate not only physical pain, but also enormous psychological pressure and huge financial burden [9,10]. Some studies have indicated that depression and anxiety are two common types of psychological disorders in cancer patients [11-13]. Anxiety is often described as the emotion of fear, involving the feelings of tension, nervousness, worry, apprehension and dread for something perceived as threaten in the further. Depression has been defined as an emotion of sadness, hopelessness, lack of energy and gloom [14]. Among many types of cancer patients, the degree of anxiety in female patients was significantly higher than in male patients, and gynecological cancer patients were regarded to have the highest level of anxiety [15]. In the past, poor mental state is often regarded as a normal phenomenon accompanied by the disease, which led medical workers to ignore these symptoms. But in fact, anxiety, depression and other adverse psychological state will not only affect the patient's subjective feelings, quality of life, but also the disease progression and prognosis [16]. Especially for patients with gynecological oncology, the diseases often cause the loss of function or organism that represents female characteristics, which make the patients feel ashamed. So gynecological cancer patients are more likely to suffer from poor mental state, and interruption treatment than other cancer patients [17]. Several previous studies have shown that a monitoring coping style is related to reduce psychological impact for ovarian cancer [18,19]. So, identifying influencing factors associated with poor psychological status is important to develop appropriate target interventions for ovarian cancer patients [20,21]. Therefore, we conducted this cross-sectional study to assess the prevalence of depression and anxiety in ovarian cancer patients in western China and analyze the related influencing factors.

Methods

Study Design and Recruitment Criteria

We carried out a cross-sectional study to assess the symptoms of anxiety and depression among ovarian cancer patients and the

influencing factors. This survey was from March 2016 to March 2017, and was demonstrated in West China Second University Hospital, Sichuan University, China. The study was approved by the Ethics Committee of West China Second University Hospital, Sichuan University. All participants in the survey filled in informed consent. Inclusion criteria were

1. Being pathologically diagnosed as epithelial ovarian cancer.
2. Able to read and understand the questionnaire in Chinese.
3. With clear consciousness.
4. Over 18 years old. Exclusion criteria were
 - a) Had a history of psychiatric disease.
 - b) Unable or unwilling to fill in informed consent or communicate with study staff.
 - c) Accompany other kind of cancers.

Measurements of Anxiety and Depression Symptoms

We adopted Hospital Anxiety and Depression Scale (HADS) [22] to measure the degree of anxiety and depression symptoms. This 14-item questionnaire includes two subscales, anxiety subscales (seven items) and depression subscales (seven items). Responses for each question range from 0 to 3 (0=completely not; 1= a little; 2=somewhat and 3=very much). The total score point ranges from 0 to 21. The higher of the score, the severe of anxiety and depression symptom is. The score "less than 8" is within normal range, "8-10" suggests a possible clinical anxiety or depression and "over 10" indicates a probable anxiety or depression mood disorder. The instrument has been widely used in China with sufficient reliability. The internal reliability alpha valued for the symptoms of anxiety and depression were 0.828 and 0.901 respectively in the current study.

Measurement of Coping Style

Coping style was measured by the 20-item Simplified Coping Style Questionnaire (SCSQ) [23]. Each item is rated as four-point Likert scale (0=never do; 1=seldom do; 2=often do and 3=always do). This instrument is a self-report questionnaire which contains 20 items and consists of two subscales: positive and negative coping. The high score of each dimension indicated frequent usage of this type of coping. The internal reliability alpha valued for the positive and negative coping style was 0.793 and 0.835 respectively in the current study.

Statistical Analysis

According to the epidemiology of sample size estimates, the required sample size is 10 times of the research factors and the number of related factors in our study is 10. Meantime consider about the 20% loss rate; 120 participants are needed to be enrolled. Pre-survey showed that the prevalence of cancer-related anxiety

and depression were about 50%, the actual sample should be more than 240 cases. The survey data were entered into Epidata, and specialized software was used for managing data. This program facilitates interactive entry and data correction and maintains consistent and accurate trial data. SPSS 17.0 software package was

used for statistical analyses. Chi-square test or T test was used to analyze the statistical differences of qualitative data. Significance was set at P<0.05. In the multivariate analysis, binary logistic regression analysis was used and odds ratios (OR) with 95% confidence intervals (CI) were calculated.

Result

Table 1: Clinical and Social-Demographic Data of Patients.

Variable	Number(n)	Percentage (%)
Age, y		
18~45	87	32.22
45~60	148	54.81
≥60	35	12.97
Marital status		
unmarried	13	4.82
married	257	95.18
Education level		
Primary or high school	177	65.55
Bachelor's degree or master	93	34.45
Family income, Yuan/month		
≤3000	115	42.59
3000~5000	103	38.15
≥5000	52	19.26
Cancer staging		
III	195	72.22
IV	75	27.78
Medical costs, Yuan		
20000~40000	197	72.96
≥40000	73	27.04

Finally, a total of 270 hospitalized ovarian cancer patients were enrolled in the study. Table 1 presented the patients' characteristics of demographic and clinical variables. Among 270 ovarian cancer patients, there were 148(54.81%) cases who are 45-60 years old, the age range was 18 to 82 years (53.54±5.49. 95.18%) patients were married, there were 65.55% of patients graduated from primary and high school and only 52 patients (19.26%) earned more than 5,000 Yuan per month. The majority of ovarian cancer

patients were under stage-III, accounting for 72.22%, 197 patients (72.96%) spent 20,000-40,000Yuan when they were hospitalized.

The Prevalence of Cancer-Related Depression and Anxiety

The prevalence of cancer-related depression was 47.03% and cancer-related anxiety was 57.77% among the 270 ovarian cancer patients. Approximately 90.38% of cancer-related anxiety and 91.33% of cancer-related depression were both mild (Table 2).

Table 2: Clinical and Social-Demographic Data of Patients.

Sample size	Variable	N	Morbidity (%)	Distribution		
				Degree	n	Composition
270	Anxiety	156	57.77	Mildly	141	90.38
				Moderate	13	8.33
				Severe	2	1.29
270	Depression	127	47.03	Mildly	116	91.33
				Moderate	10	7.88
				Severe	1	0.79

Associations of Demographic and Clinical Variables with Symptoms of Depression and Anxiety

As shown in Table 3-1 & 3-2, the prevalence of cancer-related depression and anxiety were associated with education level and income, there was statistically significant differences in education level (depression: P=0.000, anxiety: P=0.009) and

income (depression: P=0.009, anxiety: P=0.004). Cancer-related depression and anxiety were associated with coping style among the 270 ovarian cancer patients, there was statistically significant differences (depression: P=0.032 for active style and P=0.000 for negative style, anxiety: P=0.006 for active style and P=0.000 for negative style)

Table 3-1: Relation Ship Between Various Factors and Cancer-Related Anxiety, Depression.

Variable	N		Anxiety				Depression			
			n	%	X ²	P	n	%	X ²	P
Age, y	18~45	87	49	56.32				36	41.37	
	45~60	148	84	56.75	1.043	0.594	74	50	1.673	0.433
	≥60	35	23	65.71				17	48.57	
Marital Status	Unmarried	13	8	61.53				8	61.53	
	married	257	148	57.58	0.079	1	119	46.3	1.153	0.395
Education primary or high school level		177	92	51.97				67	37.85	
Bachelor's degree/ master		93	64	68.81	7.087	0.009*	60	64.51	17.398	0.000*
Income	≤3000	115	57	49.56				46	40	
Yuan / month	3000 ~5000	103	59	57.28	11.003	0.004*	47	45.63	9.394	0.009*
	≥5000	52	40	76.92				34	65.38	
Cancer III		195	110	56.41				89	45.64	
Staging IV		75	46	61.33	0.328	0.587	38	50.66	0.373	0.589
Medical costs	20000 ~40000	197	116	58.88				93	47.2	
Yuan	≥40000	73	40	54.79	0.365	0.58	34	46.57	0.009	1

Note: *P<0.05

Table 3-2: Relationship Between Coping Style and Cancer-Related Depression, Anxiety.

Variable	N	Active style	t	P	Negative Style	t	P
Anxiety	Yes 156	20.60±5.224	2.77	0.006*	13.07±3.943	-6.019	0.000*
	No 114	22.68±7.075			10.18±3.94		
Depression	Yes 127	20.63±4.577	2.15	0.032*	13.11±3.776	-4.906	0.000*
	No 143	22.23±7.198			10.73±4.138		

Multivariate Analysis of Factors Associated with Cancer-Related Depression, Anxiety

Binary logistic regression showed that there were statistically significant differences in education level (OR 0.307, 95% CI 0.157-0.603), active style (OR 0.903, 95% CI 0.859-0.948) and negative

style (OR 1.298, 95% CI 1.195-1.410) in cancer-related depression (Table 4-1). The multivariate analysis also showed that cancer-related anxiety was associated with education level (OR 0.189, 95% CI 0.096-0.371), active style (OR 0.926, 95% CI 0.883-0.971) and negative style (OR 1.248, 95% CI 1.155-1.348) (Table 4-1).

Table 4-1: Multivariate Analysis of Factors Associated with Cancer-Related Depression.

Variable	95% C. I			
	P	OR	Lower	Upper
Age, y	0.302	1.263	0.811	1.965
Marital status	0.469	0.614	0.164	2.299
Education level	0.001*	0.307	0.157	0.603
Income	0.852	0.864	0.381	1.958

Cancer staging	0.99	1.013	0.131	7.831
Medical costs	0.9	0.875	0.111	6.904
Active style	0.000*	0.903	0.859	0.948
Negative style	0.000*	1.298	1.195	1.41

Note: *P<0.05

Discussion

The main findings of this population-based cross-sectional study were that

- The prevalence of ovarian cancer-related depression was 47.03% while the prevalence of cancer-related anxiety was 57.77% in western Chinese patients with ovarian cancer. Approximately 91.33% of ovarian cancer-related depression was slight and 90.38% of cancer-related anxiety was mild.
- There were statistically significant differences in education level, income and coping style on ovarian cancer-related depression and anxiety.
- The multivariate analysis showed that education and coping style were the independent influencing factors of cancer-related depression and anxiety.

Chun Li Liu [12] found that the prevalence of ovarian cancer-related depression was 47% and the anxiety was 51.5%, which was similar to the present study. But Price M A [24] performed a prospective cohort study which enrolled 798 Australian ovarian cancer patients and reported that the clinical anxiety was 15% and depression was only 5.9%. And a meta-analysis indicated that the prevalence of symptoms of depression and anxiety in Chinese cancer patients was 54.90% and 49.69% [25], respectively, which was not limited to ovarian cancer. Moreover, a systematic review has shown that the prevalence of depression and anxiety in women with ovarian cancer is significantly greater than healthy female [26]. Therefore, it suggests that the Chinese ovarian cancer patients have relatively higher levels of anxiety and depression. Besides, in our study, ovarian cancer-related anxiety level was slightly higher than depression level. It is consistent with the results of Mielcarek P [27] in 2016, which also found that the level of anxiety was higher than depression in patients from Poland with advanced ovarian cancer, and the prevalence of pathological anxiety was the highest(74%) prior to surgery. All the patients participated in our study were advanced stage of ovarian cancer, too. Another study [28] showed that the prevalence of depression in Chinese patients with malignant tumors was 54.90%. And Hu Hong [29] reviewed 35 studies about cancer-related depression in china, a total of 7445 cases of cancer patients were included and found the prevalence of cancer depression was ranged from 19% to 95%. So, there is no doubt that the sample size, stage of cancer, and choice of assessment tools are the factors that lead to the different results between our study and previous studies. In developed countries, the improved recognition of psychological impact from ovarian cancer may lead

workers seeking for mental treatment and other social supports actively.

In the study, we found that ovarian cancer-related depression and anxiety are associated with education level, income and coping style. Education and coping style were the independent influencing factors. Binary logistic regression analysis showed that the factors associated with ovarian cancer-related depression were education level, active style and negative style. And cancer-related anxiety was also associated with education level, active style and negative style. Liu CL [12] found ovarian cancer patients with the higher education levels were tended to have a lower prevalence of cancer-related depression. But another study [30] reported the opposite result which were consistent with the findings of our study. The reason may be that the patients with higher educational levels often took the initiative to get knowledges of cancer relevant information, but the poor prognosis of ovarian cancer gave rise to the symptoms of depression and anxiety. Patients with lower educational levels were tended to dependent on medical institutions and medical staff more and cooperate with the diagnosis and treatment actively. Wang hong-qiao[31] found that the symptoms of depression and anxiety in ovarian cancer patients were positively correlated with negative coping and negatively correlated with positive coping which were consistent with the findings of our study. The reason may be that coping style has played a regulatory and mediating role between stress and psychological response. Previous studies [32] have shown that patients who actively coping with problems are prone to optimism emotion. Several studies have provided evidence for the influence of positive psychological factors in cancer patients [33-35], and a meta-analysis [36] have shown that psychological intervention can significantly reduce the anxiety and depression of ovarian cancer patients. This means that clinical staffs should make more efforts to provide health education on coping style and psychological intervention to ovarian cancer patients.

Limitations

Our study has several limitations. Firstly, we didn't compare the differences of anxiety and depression levels in patients with early and advanced ovarian cancer and explore the associations between the psychological and stage of ovarian cancer. Secondly, we only focused on the symptoms of depression and anxiety, other psychological disorders, such as post-traumatic stress disorders, obsession and inferiority, have not been investigated. Thirdly, the study adopted convenient sampling method and conducted in only one hospital, the extrapolation of research results was limited. So, additional well-designed studies with multi-center and rigorous methodologies are required.

Conclusion

Our findings highlight that about half of ovarian cancer patients suffered from cancer-related depression and anxiety, more than 90% of depression, anxiety was mild. Among them education level, coping style were significant and independent determinants. It is essential to ensure that the health care system provides efficient health education, psychological intervention and support. In particular, clinical staff should pay more attention to the mood of ovarian cancer patients, early detection of cancer-related depression and anxiety, to promote the mental health of ovarian cancer patients.

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Disclosure Statement

The authors declare no competing interests.

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