

# Correlation Between Symptom Cluster and Quality of Life in Patients with Endometrial Cancer After Operation

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**Abstract:** Objective: To investigate the composition of symptom clusters in patients with endometrial cancer after surgery, and to explore the correlation between symptom clusters and quality of life in patients with endometrial cancer after surgery. Methods: A cross-sectional survey was conducted among 230 patients with endometrial cancer after surgery using the M.D. Anderson Symptom Assessment Scale, the functional assessment of endometrial cancer Treatment Scale and the general information questionnaire to understand the personal data, symptoms and quality of life of patients. Results: There were 4 symptom clusters in postoperative patients with endometrial cancer, including sickness symptom cluster, gastrointestinal symptom cluster, fatigue-related symptom cluster, and emotional symptom cluster. The cumulative variance contribution rate was 76.04%. Except for the social/family status in the quality of life, there was no correlation between the sickness symptom cluster and the gastrointestinal symptom cluster ( $P > 0.05$ ), the other symptom clusters were negatively correlated with the quality of life of patients ( $P < 0.05$ ). Conclusion: Patients with endometrial cancer are faced with a variety of psychological and physical symptoms, which seriously affect the quality of life. Clinical medical staff should strengthen the management of patients' symptoms, assess them timely and accurately, and actively take effective measures to prevent or reduce the occurrence of symptoms.

**Keywords:** Endometrial Cancer, Symptom Clusters, Quality of Life

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## 1. Introduction

Endometrial cancer is a malignant tumor of the female reproductive system. In recent years, the incidence of endometrial cancer has gradually increased and tends to be younger [1-2], which seriously threatens the health of women. The diagnosis and treatment of endometrial cancer make patients suffer from a variety of symptoms [3], such as fatigue, sleep disturbance, nausea, etc. Moreover, the symptom clusters composed of multiple symptoms are more destructive to the body and reduce their quality of life [4]. At present, reports on symptom clusters of cancer patients mainly focus on diseases such as cervical cancer, lung cancer and liver cancer [5-7], while there are few studies on symptom clusters of endometrial cancer. This study investigates the symptom cluster distress faced by patients with endometrial cancer after

surgery, analyzes the relationship between symptom clusters and quality of life, and provides a basis for nursing staff to improve symptom management.

## 2. Materials and Methods

### 2.1. General Data

From January 2022 to May 2023, convenience sampling was used to select 232 patients with endometrial cancer after gynecological surgery in a Classiii Grade A hospital for a cross-sectional questionnaire survey. Inclusion criteria:

1. Endometrial cancer was confirmed by pathological diagnosis;
2. Receiving surgical treatment;
3. Normal cognition, can clearly express their own wishes.

Exclusion criteria:

- 1) History of mental illness or language disorder;
- 2) Complicated with other gynecological malignant tumors or other systemic malignant tumors;
- 3) Recurrence or previous treatment. This study was approved by the hospital ethics committee, and informed consent was obtained from all patients.

According to the sample size requirements of factor analysis, the ratio of each item to sample size was 1: 5 to 1: 10. The sample size was estimated on the basis of the 19-item Anderson Symptom Inventory. The required sample size ranged from 95 to 190. During the study period, a total of 232 patients with endometrial cancer met the inclusion criteria, of whom 5 (2.16%) refused to participate, and 2 (0.86%) had missing important data. A total of 225 patients were included in this study.

**2.2. Methods**

**2.2.1. Survey Tools**

1. General information questionnaire: the table included age, occupation, marital status, tumor stage, complicated chronic diseases, etc.
2. The M. D. Anderson Symptom Inventory consisted of two parts. Part I: Symptom assessment, which evaluated 13 common symptoms and their severity in the past 24 hours, including pain, fatigue, nausea, sleep disturbance, distress, shortness of breath, amnesia, appetite, drowsiness, dry mouth, sadness, vomiting, and numbness. Part II, a six-item questionnaire, assessed the impact of the 13 symptoms on the patient's daily life over the past 24 hours, including general activities, mood, work, relationships with others, walking, and enjoyment of life. Using a numerical rating method, the scale was scored on a scale of 0-10, with 0 indicating no symptoms or no interference and 10 indicating extremely severe symptoms or interference.
3. The systematic review of functional evaluation of endometrial cancer treatment was used to measure the quality of life of cancer patients, with a total of 43 items and 5 domains, including physiological status (7 items), social/family status (7 items), emotional status (6 items), functional status (7 items) and additional attention (16 items). A five-point scale was used, with scores ranging from 0 to 4 representing not at all disagree to strongly agree. Items C1-C7, C15, C17-C20, C28-C43 were reverse scoring, and the remaining items were forward scoring. The scores of each field were summed as the total score, and the higher the score, the better the quality of life of patients.

**2.2.2. Data Collection Method**

The study was conducted in a one-to-one manner within a month after surgery, and during the questionnaire, the investigator explained the purpose and precautions of the study to the patients and promised to keep the patient information confidential. The investigators were uniformly trained to reduce the survey bias. A total of 232 questionnaires were distributed during the survey, and 225 valid questionnaires were returned, with an effective recovery rate of 96.98%.

**2.3. Statistical Methods**

SPSS 23.0 was used to establish a database and conduct statistical analysis. Measurement data were expressed as mean ± standard deviation, and count data were expressed as frequency and percentage. When describing the distress dimension of symptoms, although it did not conform to the normal distribution, in order to increase the comparability between the symptom scores, the distress gradient of symptoms was presented. Referring to the processing method of similar studies at home and abroad, it was still expressed as the mean and standard deviation. Exploratory factor was used to extract symptom clusters, and Spearman correlation analysis was used to analyze the correlation between symptom clusters and quality of life. P<0.05 was considered statistically significant.

**3. Results**

**3.1. General Information of Patients**

Data of 225 patients were collected in this study, aged from 28 to 83 years, with an average age of (54.40±9.56) years, as shown in Table 1.

*Table 1. General data of the patients.*

General Information	category	Number of cases (n)	Percentage (%)
Age	<30	1	0.44
	30-<40	13	5.78
	40-<50	53	23.56
	50-<60	91	40.44
Marital status	≥ 60	67	29.78
	Married	216	96
	unmarried	2	0.89
Occupations	Divorced/widowed	7	3.11
	Employed	60	26.67
Place of residence	unemployed	165	73.33
	village	102	45.33
Medical payment methods	city	123	54.67
	Out of pocket	19	8.44
Chronic diseases	Medical insurance	206	91.56
	Yes	93	41.33
	No	132	58.67
Body mass index	Thin	7	3.11
	Normal	95	42.22
	Overweight	82	36.45
	Obesity	41	18.22
Tumor staging	I	146	64.89
	II	48	21.33
	III	29	12.89
	IV	2	0.89

**3.2. Occurrence of Symptoms the Top Three Symptoms Were Disturbed Sleep, Fatigue and Poor Appetite**

The top three symptoms in terms of severity were sleep disturbance, distress, and fatigue, as shown in Table 2.

**Table 2.** Patient symptom occurrence and severity score.

Items of symptoms	Number of symptoms (N, %)	Score of severity (mean±SD)
Pain	150 (66.67)	2.76±2.17
Fatigue	184 (81.78)	2.97±2.01
Nausea	176 (78.22)	2.91±1.94
Disturbed sleep	191 (84.89)	3.60±2.04
Distress	172 (76.44)	3.20±2.20
Shortness of breath	141 (62.67)	1.60±1.52
Forgetfulness	121 (53.78)	1.40±1.59
Poor appetite	181 (80.44)	2.95±1.86
Doze off	109 (48.44)	1.18±1.44
Dry mouth	131 (58.22)	1.58±1.59
Sense of sadness	171 (76.00)	2.86±2.07
Vomiting	147 (65.33)	2.64±2.11
Sense of numbness	110 (48.89)	1.20±1.37

### 3.3. Symptom Distress

The incidence of postoperative symptom distress in patients with endometrial cancer ranged from 64.44% to 91.11%, and the top three in terms of severity were work, emotion and general activities, as shown in Table 3.

**Table 3.** Degree of symptom distress to daily life in postoperative patients with endometrial cancer.

Items of symptoms	Number of cases (N, %)	Distress severity score (mean±SD)
General activities	179 (79.56)	2.90±1.93
mood	182 (80.89)	3.49±2.23
Work (including housework)	205 (91.11)	3.50±1.83
Relationships	145 (64.44)	1.69±1.45
Walk	172 (76.44)	2.81±1.86
Life fun	153 (68.00)	2.64±2.39

### 3.4. Categories of Symptom Clusters

Principal component analysis combined with maximum variance orthogonal rotation was used to extract symptom clusters, and 13 symptoms were included in the analysis. Kaiser-Meyer-Olki (KMO)=0.769, and Bartlett spherical value test results showed  $P < 0.001$ , indicating that the data were suitable for factor analysis. There were 4 common factors with the final characteristic root value  $\geq 1$ , and the cumulative variance contribution rate was 76.04%. After orthogonal rotation with maximum variance, the factor loading matrix after rotation is shown in Table 4.

**Table 4.** Factor loadings of symptom clusters in postoperative patients with endometrial cancer.

Symptoms	Factor 1 Symptom clusters of illness	Factor 2 Gastrointestinal symptom cluster	Factor 3 Fatigue symptom cluster	Factor 4 Affective symptom cluster
Sense of numbness	0.893	—	—	—
Doze off	0.826	—	—	—
Forgetfulness	0.802	—	—	—
Shortness of breath	0.766	—	—	—
Dry mouth	0.731	—	—	—
Vomiting	—	0.922	—	—
Nausea	—	0.893	—	—
Poor appetite	—	0.836	—	—
Poor appetite	—	—	0.899	—
Fatigue	—	—	0.857	—
Disturbed sleep	—	—	0.836	—
Sense of sadness	—	—	—	0.923
Distress	—	—	—	0.899
Variance contribution rate	25.667	18.803	17.852	13.714
Cronbach's alpha	0.868	0.885	0.848	0.863

### 3.5. Quality of Life

The total score of quality of life of 225 patients with endometrial cancer after surgery was (115.68±18.12), as shown in Table 5.

**Table 5.** Quality of life scores for patients with endometrial cancer after surgery (mean±SD).

Project	Number of items	score	Item mean score
Physical	7	15.37±5.39	2.20±0.77
Social/Family	7	22.56±4.03	3.22±0.58
emotional	6	14.29±6.80	2.38±1.13
Functional	7	17.20±5.68	2.45±0.81
Endometrial	16	46.26±5.17	2.89±0.32
Total score	43	115.68±18.12	2.69±0.42

### 3.6. Correlation Analysis

Except that social/family status in quality of life was not

correlated with the pathogenetic symptom group and gastrointestinal symptom group ( $P > 0.05$ ), other symptom groups were negatively correlated with patients' quality of life

( $P < 0.05$ ), as shown in Table 6.

*Table 6. Correlation coefficients between symptom cluster categories and quality of life in patients (r).*

Project	Symptom clusters of illness	Affective symptom cluster	Fatigue symptom cluster	Gastrointestinal symptom cluster
Physical	-0.291**	-0.573**	-0.740**	-0.438**
Social/Family	-0.103	-0.242**	-0.259**	-0.97
emotional	-0.184**	-0.830**	-0.261**	-0.196**
Functional	-0.180**	-0.354**	-0.369**	-0.216**
Endometrial	-0.432**	-0.242**	-0.617**	-0.265**
Total score	-0.334**	-0.717**	-0.633**	-0.328**

\*\* :  $P < 0.01$

## 4. Discussion

### 4.1. Symptom Cluster Analysis of Postoperative Patients with Endometrial Cancer

In 2005, Kim et al. [8] defined a symptom cluster as consisting of two or two simultaneous symptoms, and the symptoms were related to each other, the symptom clusters were independent, and the relationship between the symptoms in the clusters was stronger than that between the symptoms in different clusters. Compared with a single symptom, the synergistic effect of symptoms in symptom clusters increases the symptom burden of cancer patients, and if not controlled, it will accelerate the deterioration of patients' functional status and quality of life [9]. The results of this study showed that four symptom clusters were obtained by factor analysis of the 13 main symptoms.

1. Gastrointestinal symptom cluster, including nausea, vomiting and poor appetite, which is similar to the results of He et al. [10], suggesting that gastrointestinal symptom cluster is widespread in cancer patients. Studies have shown that the development of non-vomiting ward can effectively reduce the occurrence of nausea, vomiting and other symptoms in patients [11].
2. Affective symptom cluster, including sadness and distress, which is partially consistent with the research results of Hu et al. [12]. Due to the delicate mind and sensitivity to the environment of female patients, the distress of psychological symptoms is increased to a certain extent. Li et al. [13] pointed out that nursing staff should pay special attention to the training of psychological resilience, cultivate and improve the optimistic and positive attitude of patients, so as to reduce the distress caused by symptom clusters.
3. Fatigue symptom cluster, including pain, fatigue and sleep disturbance, which is consistent with the results of many studies [14-16], suggesting that the composition of fatigue-related symptom cluster is relatively stable. Sleep disturbance was the most common and serious symptom in this study, which may be related to the long treatment period, patients' concerns about the effect of treatment, and side effects after treatment..
4. Symptom clusters of illness, including numbness, drowsy, amnesia, shortness of breath, and dry mouth,

which are similar to the research results of Xia et al. [17], and such symptom clusters are closely related to treatment and medication. Feng et al. [18] named amnesia and numbness as neurotoxic symptom clusters, which may be related to assessment tools, methods for distinguishing symptoms, statistical and classification methods, and different research subjects. Therefore, in the future, we can try to find symptom clusters that are stable across time and population differences on the basis of understanding the core connotation of symptoms, combining with the etiological mechanism of symptom clusters and the results of statistical analysis.

### 4.2. Correlation Between Symptom Clusters and Quality of Life in Postoperative Patients with Endometrial Cancer

The appearance of various uncomfortable symptoms leads to the decline of the patient's physical condition, reduces the patient's treatment effect and compliance with treatment, which leads to the decline of the quality of life. This study showed that except social/family status in quality of life was not correlated with affective symptom cluster and gastrointestinal symptom cluster ( $P > 0.05$ ), other symptom clusters were negatively correlated with quality of life of patients ( $P < 0.05$ ). affective symptom cluster and fatigue symptom cluster are negatively correlated with quality of life, which is similar to the research results of Sitlinger et al. [19]. It may be because sadness and fatigue make patients depressed and thus reduce their quality of life. Among the scores of each dimension, the average score of the dimension of physiological status was the lowest, and the average score of the dimension of social/family status was the highest, which was similar to the research results of Jiang et al. [20]. Studies have shown that [21-22] social support helps to improve the quality of life. Therefore, medical staff should provide communication guidance to family members to help endometrial cancer patients better face the troubles caused by the disease.

## 5. Conclusion

This study took patients with endometrial cancer as the research object, which provided a theoretical basis for nurses to carry out symptom management, and enhanced the awareness of symptom management. However, only the

correlation between symptom clusters and quality of life was analyzed, which lacked integrity. Therefore, the correlation between symptom groups and quality of life of patients with endometrial cancer after surgery also requires longitudinal studies with large samples to analyze the shape of symptom groups, study the changes of symptom groups, establish a symptom group model of patients with endometrial cancer after surgery, and take timely intervention measures to reduce symptoms and improve quality of life.

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