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## Symptom clusters of ovarian cancer patients undergoing chemotherapy, and their emotional status and quality of life

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### ABSTRACT

**Purpose:** We conducted a descriptive study to identify the symptoms, emotional status, and quality of life experienced by hospitalized ovarian cancer patients undergoing chemotherapy, and influencing the factors of symptom clusters on their quality of life.

**Methods:** A total of 192 patients who had been diagnosed with ovarian cancer and received adjuvant chemotherapy after surgery more than once from 2 university hospitals with over 800 beds located in the Seoul and Gyeonggi areas of South Korea were included in this study. Using a structured questionnaire, the symptoms, emotional status, and quality of life by these patients were investigated from May 2012 to June 2013.

**Results:** We identified the following 7 symptom clusters among ovarian cancer patients undergoing chemotherapy: psychological distress, fatigue-pain, abdominal discomfort, flu-like symptoms, fluid accumulation, and peripheral neuropathy. Patients with a high level of anxiety or depression experienced all symptoms at a higher level, and the 7 symptom clusters influenced all aspects of the patients' quality of life.

**Conclusions:** This study provides to need interventions for the quality of life of ovarian cancer patients need to include the management of not only the physical symptoms and treatment-related side effects, but also the changes in their emotional status and daily lives.

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### 1. Introduction

Ovarian cancer is often diagnosed during its advanced stages because symptoms are either non-existent or mild during the early stage, the mortality rate of ovarian cancer is the highest among all gynecological cancers (Hilpert et al., 2007). In Korea, the incidence rate of ovarian cancer is 8.6 per 100,000, with a mortality rate of 3.6 per 100,000, and the 5-year relative survival rate is only 61.9%, even with continuous treatment (Jung et al., 2015).

Advanced ovarian cancer patients generally receive treatment for more than 6 months after cytoreductive surgery and 6–8 cycles of adjuvant taxane/carboplatin chemotherapy (National Compre-

hensive Cancer Network, 2014). Ovarian cancer patients experience symptoms such as severe fatigue, loss of sensory, pain, nausea, vomiting, abdominal discomfort, and change in body image not only during chemotherapy but also after treatment (Kim, 2009; Meraner et al., 2012; Price et al., 2010). Cancer patients typically experience multiple concurrent and interrelated symptoms, associations (Kirkova et al., 2011). Fox and Lyon (2007) reported that the concurrent symptoms experienced by ovarian cancer survivors were correlated, and that depression was associated with fatigue. The interactions of these concurrent symptoms can exacerbate existing symptoms or even cause tertiary symptoms (Beck et al., 2005). Therefore, identification of concurrent symptoms in ovarian cancer patients undergoing chemotherapy is necessary for planning interventions for controlling and managing the symptoms.

A previous study reported that compared to women in general, ovarian cancer patients undergoing treatment show a similar percentage of those who experience clinical anxiety (15.0%), but a

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higher percentage of those who experience clinical depression (5.9% vs. 3.0) (Price et al., 2010). Thus, during the treatment process, ovarian cancer patients experience not only physical symptoms but also negative emotions such as anxiety or depression and the feeling that their quality of life can deteriorate because of concerns over uncertainty in prognosis (Kim, 2009; Meraner et al., 2012; Price et al., 2010).

Ovarian cancer patients' quality of life has been shown to deteriorate after surgery (Meraner et al., 2012). Motor weakness and gastrointestinal pain during chemotherapy, lethargy, fatigue, and toxicity grade of mood after treatment have been shown to be associated with quality of life (Butler et al., 2004). Meraner et al. (2012) reported that decreased quality of life associated with gastrointestinal symptoms, treatment-related side effects, anxiety, and depression gradually improved during the course of treatment, whereas the quality of life associated with peripheral neuropathy or changes in body image did not. Therefore, identifying the impact of symptom clusters that ovarian cancer patients experience during chemotherapy can serve as evidence for planning and providing the adequate intervention for these patients.

International studies on ovarian cancer patients and their symptoms include the physical and psychosocial symptom monitoring strategy proposed by Meraner et al. (2012), the symptom indices by Jensen et al. (2011), and the symptom cluster and quality of life in survivors by Fox and Lyon (2007). Fox and Lyon (2007) categorized the symptoms experienced by ovarian cancer survivors into pain, fatigue, and depression symptom clusters and identified relationship between symptom cluster and the quality of life.

No studies assessing the symptoms experienced by ovarian cancer patients during or after treatment have been conducted in South Korea. A study on the symptom clusters experienced by gynecological (cervical, ovarian, and endometrial) cancer patients revealed diverse patient characteristics of treatment types or cancer stages (Chun et al., 2008). In contrast, ovarian cancer patients undergoing active treatment such as surgery and chemotherapy exhibit diverse symptoms. Therefore, identifying the symptoms experienced by ovarian cancer patients on their quality of life is necessary to develop an active intervention in order to improve their quality of life in clinical nursing practice. Symptoms into symptom clusters, we tried to verify the impacts of these clusters on the patients' quality of life.

## 2. Methods

### 2.1. Study design

We conducted a descriptive study aimed at identifying the symptoms, emotional status, and quality of life experienced by hospitalized ovarian cancer patients undergoing chemotherapy, and at elucidating the impacts of symptom clusters on the patients' quality of life.

### 2.2. Study participants and data collection

The study participants were adult patients (>18 years) who were diagnosed with ovarian cancer at 2 university hospitals with > 800 beds located in the Seoul and Gyeonggi areas of South Korea and received adjuvant chemotherapy after surgery more than once. Patients with deteriorated cognitive function such as delirium or brain metastasis or a history of depression were excluded from our study. The study participants' performance status was 0–2 on the Eastern Cooperative Oncology Group (ECOG) score. We included patients who understood the purpose of the study, verbally agreed to participate, and were able to

communicate. Since the desirable sample number for factor analysis is 4–5 times the number of questions (Lee et al., 2009) and after considering the dropout rate, the questionnaire was distributed to 200 patients. The questionnaire was in a self-reporting format, and all of them were retrieved. After excluding 8 individuals whose responses were insincere, 192 patients were selected as the final study:

Data were collected from May 2011 to June 2013 after obtaining approval from the C University Bioethics Review Committee (KC12QISI0082). We first explained the purpose, methods, and process of the study to the hospitalized ovarian cancer patients in their hospital rooms and informed them that their personal information was protected and that there would be no harm of dropping out during the study; subsequently, consent to participate was received. Then, the questionnaires were filled out in a room by patients who were in multi-bed rooms, while those who were using a single-bed room filled out the questionnaire in their own room. The average time to fill out the questionnaire was 10–15 min.

## 3. Measures

### 3.1. Symptom questionnaire

We developed 48 questions that were based on the 32 symptoms of the Memorial Symptom Assessment Scale-Short Form (MSAS-SF; Chang et al., 2000), 13 symptoms of the M. D. Anderson Symptom Inventory-Korean version (Yun et al., 2006), and the symptoms proposed by Koldjeski et al. (2003). As a result of a pilot study on 10 ovarian cancer patients, the wording of the questions was modified, and 3 symptoms were added. After consulting with 2 gynecologic oncologist, 3 professors of nursing, 1 oncology nurse, and 4 gynecology nurses with more than 5 years of clinical practice experience on 50 questions, questions on similar symptoms were combined, and a total of 29 questions with a Content Validity Index (CVI) of >.8 were finalized.

The participants were instructed to provide their responses to each question on whether they had experienced such symptoms, and if so, rate the pain intensity caused by the symptoms on a scale ranging from 0 ("not at all") to 4 ("very much so"). For each question, a higher score indicates a higher level of suffering caused by the symptom. The score ranges from 0 ('not at all') to 4 ('very much so'). The reliability of the tool (Cronbach's  $\alpha$  value) was .94 (.73–.94).

### 3.2. Emotional status

Emotional status was measured by the Hospital Anxiety and Depression Scale (HADS) that was originally developed by Zigmond and Snaith (1983) and standardized by Oh et al. (1999).

Permission to use HADS was received from GL assessment. This tool consists of 14 questions 4-point scale, 7 anxiety questions, and 7 depression questions, and the score ranges from 0 to 21. A higher score indicates a higher level of anxiety or depression. An anxiety or depression score <7 was classified as a non-case, 8–10 as a doubtful case, and above 11 as a clinical case (Zigmond and Snaith, 1983). The reliability of the tool, as measured by the Cronbach's  $\alpha$  value, was shown to be .89 for anxiety and .86 for depression in the validation study. In our study, we found  $\alpha$  values of .90 and .82, respectively.

### 3.3. Quality of life

The Korean version (version 4) of the Functional Assessment of Cancer Therapy-Ovarian (FACT-O) developed by Cella et al. (1993) was used to assess quality of life after obtaining permission from Functional Assessment of Chronic Illness Therapy (FACIT). A total of

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