Non-cancer life stressors contribute to impaired quality of life in ovarian cancer patients ☆

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HIGHLIGHTS

• Number and severity of life stressors were unrelated to participants' QOL before surgery.
• Greater number of life stressors at one-year post surgery was related to poorer concurrent quality of life.
• Greater number of life stressors prior to surgery predicted poorer overall QOL at one year.

ARTICLE INFO

ABSTRACT

Objectives. Diagnosis and treatment for a life threatening illness such as cancer are known to be psychologically impactful. However, little is known about the influence that non-cancer life stressors have on the quality of life (QOL) of ovarian cancer patients. The goal of the present study was to examine associations between non-cancer life stressors and QOL in 123 women with invasive epithelial ovarian cancer who were followed prospectively and longitudinally for one year.

Methods. Mixed models for repeated measures were used to examine the relationship between life stressors and QOL pre-surgery and one year later, while adjusting for age, cancer stage, depressive symptoms, anxiety, and chemotherapy status (at one year). Prospective associations between QOL pre-surgery and one-year QOL were also examined.

Results. Number and severity of life stressors were unrelated to QOL of participants before surgery. At one year, however, participants experiencing a greater number of life stressors reported poorer concurrent physical well-being (PWB) ($p = 0.015$), functional well-being (FWB) ($p < 0.0001$), social well-being (SWB) ($p = 0.0003$), and total QOL ($p < 0.0001$). Similar effects were found for life event severity. Finally, experiencing a greater number of life stressors pre-surgery predicted poorer overall QOL one year post-diagnosis ($p < 0.0001$).

Conclusions. Non-cancer life stressors can substantially impact long-term QOL of ovarian cancer patients, adjusting for medical variables such as chemotherapy and cancer stage, thus highlighting the importance of evaluating the stress burden of patients in ongoing cancer care.

Introduction

Given that most ovarian cancer patients have advanced stage disease [1], it is not surprising to find accompanying stress, depression, anxiety, and poorer overall quality of life (QOL) [2–6]. These experiences can have a substantial impact and persist for prolonged periods of time following initial diagnosis [6–8]. As a result, significant attention has been paid to understanding how patients cope with the stress associated with cancer diagnosis [9–11].

Although being diagnosed with a potentially life-threatening condition constitutes a major life stressor [12], cancer patients frequently report experiencing many other types of stressors (e.g., financial difficulties, relationship problems, illnesses and deaths of family members) [11]. Given the overwhelming emotions involved in facing a diagnosis of cancer, however, the impact that contextual (non-cancer) life stressors have on the QOL of cancer patients has been understudied, despite the fact that such stressors may substantially affect patients' ability to cope and their clinical trajectories.

Life stressors are linked to exacerbation of chronic medical conditions and mental health problems in a variety of populations [13,14]. Non-cancer life stressors have been linked to disturbances in QOL in breast and prostate cancer, and melanoma patients [11,15,16] as well as to melanoma patients' survival [17]. Financial and economic stressors in particular have been associated with decreased QOL for low-income women with gynecologic and breast cancers [18]. Many reports have not differentiated between cancer-related and non-cancer related stressors [19–21]; thus, little is known about the extent of non-cancer life stressors among ovarian cancer patients and the impact that such stressors may have on QOL.

The goal of the present study was to examine associations between non-cancer life stressors, overall QOL, and physical, functional, social, and emotional well-being in women with invasive epithelial ovarian cancer who were followed longitudinally over one year. The study was unique in that it examined non-cancer life stressors at two time-points: in the year pre-surgery and during the year between surgery and one-year follow-up. This study design also permitted us to examine prospective associations between life stressors occurring pre-surgery and QOL at one-year. Because we were interested in the effects of life stress independent of its potential effects on negative mood, all primary analyses controlled for symptoms of depression and anxiety.

Method

Participants

Following Institutional Review Board approval (at Universities of Iowa, Miami, and Washington University), women over 18 years of age with a new diagnosis of a pelvic or abdominal mass suspected to be ovarian cancer were recruited for the study. Inclusion was confirmed by histologic diagnosis with primary invasive epithelial ovarian, primary peritoneal, or primary fallopian tube cancer as part of a larger study examining biobehavioral factors and QOL in ovarian cancer [22]. Patients were excluded for primary cancer of another organ site, a non-epithelial ovarian tumor, an ovarian tumor of low malignant potential, neoadjuvant chemotherapy, systemic corticosteroid medication use in the last 4 months, or comorbidities known to alter the immune response. Thus, 123 women with histologically confirmed epithelial ovarian cancer who had life stress data at both time points and one-year QOL data were included in analyses.

Patients completed psychosocial questionnaires between their initial pre-operative appointment and surgery, and again at the one-year follow-up. Medical information was abstracted from patient charts.

Psychosocial assessments

Contextual life stressors. A modified version of the Life Experiences Survey (LES) [23,24] was administered to assess major life stressors over the past 12 months. The LES asks participants to indicate whether specific stressors (e.g., death of a close family member, loss of a job, relationship problems) occurred during the year before the assessment and to rate how stressful the experiences were on a 5-point Likert-type scale. The modified version of the scale used in the present study included 28 questions [24] and was utilized to minimize participant burden. These stressors have been shown to correlate with adverse health outcomes [24].

Quality of life. The Functional Assessment of Cancer Therapy (FACT-G) [25] is a 27-item self-report measure assessing QOL in cancer patients. The FACT-G contains subscales that assess physical (PWB), social/family (SWB), emotional (EWB), and functional (FWB) well-being. Participants indicate their functioning over the last 7 days on a 5-point scale, ranging from 0 (*not at all*) to 4 (*very much*). The scale has good reliability and validity [25,26]. Higher FACT-G scores indicate better QOL; means of the general US adult female population are approximately 80 ($SD = 18.6$). Five-point score changes are considered clinically significant [27].

Depressed mood. The Center for Epidemiologic Studies Depression Scale (CES-D) is a 20-item scale that measures depressive symptoms [28,29]. Items are answered on a 4-point scale, from 0 (*rarely*) to 3 (*most or all of the time*), and indicate frequency of each item in the past week. Scores of 16 and above are associated with clinical depression. A four-factor structure has been identified for the CES-D, and these factors have been used independently to characterize different facets of depression [30]. In this study, the depressive mood subscale was used as a covariate in primary analyses.

Anxious mood. The Profile of Mood States short form (POMS-SF), which lists 37 mood-related adjectives assessed over the past week was used as an indicator of anxious mood. Adjectives are rated on a 5-point scale from 0 (not at all) to 4 (extremely). The tension/anxiety subscale, including items such as "tense", "nervous", and "anxious" was used here to adjust for effects of anxiety [31].

Demographic and clinical information. Demographic information was provided by self-report. Clinical information was obtained from medical records.

Statistical analyses

Version 9.3 of SAS (SAS, Cary, NC) was used to analyze data. All distributions were examined for outliers and assumptions of non-normality. Descriptive statistics were used to examine levels of life stressors and QOL variables at baseline and one-year. Paired *t*-tests were used to test for changes in QOL from baseline to one-year. Correlations and ANOVAs were used to test for relationships between demographic variables and life stressors. Longitudinal analyses used a mixed