Predictors of Adjustment and Growth in Women With Recurrent Ovarian Cancer

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Purpose/Objectives: To analyze predictors of adjustment and growth in women who had experienced recurrent ovarian cancer using components of the Resiliency Model of Family Stress, Adjustment, and Adaptation as a conceptual framework.

Design: Cross-sectional.

Setting: Participants were recruited from national cancer advocacy groups.

Sample: 60 married or partnered women with recurrent ovarian cancer.

Methods: Participants completed an online or paper survey.

Main Research Variables: Independent variables included demographic and illness variables and meaning of illness. Outcome variables were psychological adjustment and post-traumatic growth.

Findings: A model of five predictor variables (younger age, fewer years in the relationship, poorer performance status, greater symptom distress, and more negative meaning) accounted for 64% of the variance in adjustment but did not predict post-traumatic growth.

Conclusions: This study supports the use of a model of adjustment that includes demographic, illness, and appraisal variables for women with recurrent ovarian cancer. Symptom distress and poorer performance status were the most significant predictors of adjustment. Younger age and fewer years in the relationship also predicted poorer adjustment.

Implications for Nursing: Nurses have the knowledge and skills to influence the predictors of adjustment to recurrent ovarian cancer, particularly symptom distress and poor performance status. Nurses who recognize the predictors of poorer adjustment can anticipate problems and intervene to improve adjustment for women.

Ovarian cancer is a significant health issue for women in the United States as the leading cause of death from gynecologic cancer. It is the fourth leading cause of all cancer-related deaths in women aged 40–59 years and the fifth leading cause of all cancer-related deaths in women aged 60–79 years (Jemal et al., 2009). In 2009, about 21,550 women were diagnosed with ovarian cancer and approximately 14,600 women died from the disease (Jemal et al., 2009).

Although some cancers are more prevalent in women, few are more serious and have such high recurrence rates as ovarian cancer. The overall five-year survival rate in women with ovarian cancer is only 46% (Jemal et al., 2009), primarily because almost 70% of women diagnosed with ovarian cancer have distant disease at the time of diagnosis. Seventy-five percent of women diagnosed with stage III or IV disease will have a recurrence within 22 months (Jemal et al., 2009; Markman et al., 2001). Despite the poor statistics, several treatment options exist for women with recurrent ovarian cancer to control the disease. Thus, recurrent ovarian cancer has become a chronic disease whereby women are in and out of treatment indefinitely (Martin, 2002; Ozols, 2002).

The chronic, relentless nature of the disease and treatment for women with recurrent ovarian cancer suggests that adjustment to this experience may pose significant physical and emotional challenges. Even so, some women report positive aspects of the experience (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Manne et al., 2004). Therefore, the purpose of this study was to analyze predictors of adjustment and growth in women who had experienced recurrent ovarian cancer.

Conceptual Framework

The conceptual framework for this study was derived from the Resiliency Model of Family Stress, Adjustment, and Adaptation (McCubbin & McCubbin, 1993; McCubbin, Thompson, & McCubbin, 1996), including modifications for cancer survivors by Mellon and Northouse (2001). This study focused on the effect of contextual demographic characteristics (Mellon & Northouse, 2001), illness stressor severity, and appraisal of illness stressor (McCubbin et al., 1996; McCubbin & McCubbin, 1993) on adjustment.

Because positive and negative outcomes may result from the ovarian cancer experience (Koldjeski, Kirkpatrick, Everett, Brown, & Swanson, 2007; Ponto & Barton, 2008) and commonly used measures of adjustment in the cancer literature fail to capture the potential positive outcomes of the cancer experience (L.L. Northouse, personal communication, November 20, 2005), the psychological outcomes measured in this study included growth and adjustment (see Figure 1).

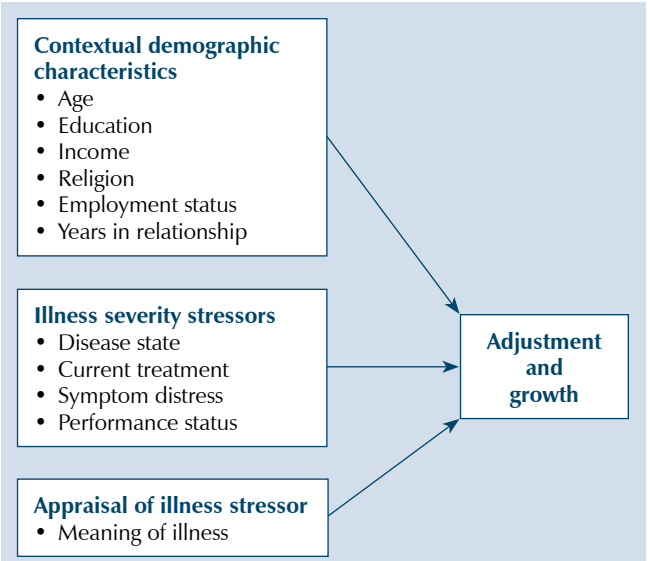

Figure 1. Conceptual Framework of Adjustment to Ovarian Cancer

Literature Review

Literature describing adjustment, growth, and the meaning of illness in women with recurrent ovarian cancer is limited. The literature available for other cancers is relevant to guide an exploration of these issues in women with recurrent ovarian cancer.

Adjustment

Adjustment to cancer is a term used commonly to describe an individual's reaction to the illness and treatment and often is described along a continuum ranging from normal to diagnosable mental disorders (Brennan, 2001; National Cancer Institute, 2008).

Studies of adjustment to cancer are many and include various cancer populations (Blanchard, Albrecht, Ruckdeschel, Grant, & Hemmick, 1995; Lewis, 1997; Northouse, 1988, 1989; Northouse, Mood, Templin, Mellon, & George, 2000; Northouse, Templin, & Mood, 2001; Northouse, Templin, Mood, & Oberst, 1998). Research in breast and other cancers has shown that better adjustment is related to demographic characteristics such as older age, higher education, higher income, and retirement (Mellon & Northouse, 2001; Northouse, Dorris, & Charron-Moore, 1995; Northouse, Laten, & Reddy, 1995).

Women with recurrent breast cancer were found to have higher levels of emotional distress than normative samples and higher distress than women with newly diagnosed breast cancer (Northouse, Laten, et al., 1995). Factors associated with adjustment problems included less education, current treatment (particularly combination chemotherapy), and a helpless feeling (Northouse, Dorris, et al., 1995; Northouse, Laten, et al., 1995).

Growth

Tedeschi and Calhoun (1996) first identified post-traumatic growth as a phenomenon that reflects positive life changes that occur after a significant threat. Though cancer commonly is viewed as a negative and distressing experience, many individuals are able to identify positive aspects of the experience and even areas of growth after cancer (Cordova et al., 2001; Manne et al., 2004; Mellon, 2002; Ponto & Barton, 2008; Weiss, 2004). Growth has been associated with demographic and illness characteristics in women with breast cancer. Younger age, higher income, longer time since diagnosis, talking about the cancer, and interpreting the cancer as a stressful event have been positively associated with post-traumatic growth (Cordova et al., 2001; Manne et al., 2004).

Meaning of Illness

The meaning of the situation or situational appraisal is the central tenet of the Resiliency Model (McCubbin & McCubbin, 1993). Meaning or appraisal of the illness is the way a person defines the illness and the potential effect the illness may have on him or her (e.g., positive versus negative) (McCubbin & McCubbin, 1993; Van Riper, 2001). Meaning has been associated with quality of life, mental and physical health, life orientation, and adjustment in individuals with chronic illness (Degner, Hack, O'Neil, & Kristjanson, 2003; Mellon, 2002; Nesbitt & Heidrich, 2000; Wallberg et al., 2003).

Several studies have evaluated the role of the meaning of illness in women with breast cancer (Coward, 1991; Degner et al., 2003; Luker, Beaver, Leinster, & Owens, 1996; Nelson, 1996; Wallberg et al., 2003). The studies suggest that most women interpret breast cancer as a challenge and that women who view the cancer experience positively have less depression, less anxiety, and better quality of life. Negative meaning has been correlated with poorer adjustment in women with lung cancer (Sarna et al., 2005).

The meaning of illness was explored in an analysis of letters and e-mails from ovarian cancer survivors to a national ovarian cancer newsletter editor (Ferrell, Smith, Juarez, & Melancon, 2003). Findings revealed that meaning in the illness was related to the women's spirituality and had both negative and positive components (Ferrell et al., 2003). Positive meaning was related to finding new purpose in life, whereas negative meaning was related to physical symptoms and facing multiple losses (Ferrell et al., 2003).

Demographic Characteristics

Research in breast and other cancers has shown that better adjustment is related to demographic characteristics such as older age, higher education, higher income, and retirement (Mellon & Northouse, 2001; Northouse, Dorris, et al., 1995; Northouse, Laten, et al., 1995). Younger

age was correlated with greater psychological distress in a sample of 143 women with ovarian cancer (Norton et al., 2004). Although length of relationship was not related to adjustment in a study of couples that included a woman with recurrent breast cancer (Northouse, Dorris, et al., 1995), it was considered in this study given the potentially lengthy relationships of couples with ovarian cancer.

Illness Severity Stressor Characteristics

Illness characteristics such as receiving treatment and experiencing symptoms have been associated with poorer adjustment (Northouse, Dorris, et al., 1995; Northouse, Laten, et al., 1995; Northouse et al., 2002). Those characteristics, along with performance status and other clinically relevant characteristics in this population, were included in the current study.

The influence of meaning and demographic and illness characteristics on adjustment and growth are largely unexplored in women with recurrent ovarian cancer. Therefore, the research questions addressed in this study were as follows.

- What are the significant demographic and illness variables that predict adjustment and growth in women with recurrent ovarian cancer?
- What is the contribution of meaning as an appraisal of illness to adjustment and growth in women with recurrent ovarian cancer?

Methods

Design

A cross-sectional research design was used to address the aim of this study and was part of a larger project examining couples who had experienced recurrent ovarian cancer. Institutional review board approval was obtained from the University of Utah and Winona State University.

Sample

Women met the criteria for the study if they were diagnosed with recurrent ovarian cancer (or recurrent primary peritoneal cancer), were 21 years or older, were able to speak and read English, and had a spouse or partner willing to participate in the study.

Recruitment Methods

Survivors were recruited through network and snowball sampling methods primarily through the National Ovarian Cancer Coalition (NOCC). Additional recruitment was conducted via e-mail (multistep process consistent with Dillman's guidelines [2006]), cancer advocacy organizations' newsletters or Web sites, and a flyer through national and local-level healthcare and cancer organizations and advocacy groups and ovarian cancer support group leaders.

Data Collection

Participants had the option of completing an Internet-based survey (N = 43) or a paper survey (N = 17).

Internet-based survey: Web-based survey software called Survey Monkey (www.surveymonkey.com) was used to collect survey data via the Internet in a private and confidential manner. Eligible individuals could access the survey via a URL specified on the recruitment e-mail, newsletter or Web site article, and flyer. The first three survey questions addressed study eligibility and were forced-choice responses; individuals were not able to proceed through the survey without answering those questions. Respondents were asked whether they had had at least one recurrence of ovarian cancer. If an individual answered "no," she was automatically moved to a screen that thanked her for her interest and ended the survey process.

Upon completion of the survey, all respondents received a message thanking them for their participation and directing them to the NOCC for information about ovarian cancer. They also were reminded that all information provided would be kept strictly confidential and would be available only to the research team.

Paper-and-pencil survey through the postal mail: For those who requested, a paper survey was provided via postal mail. After the researchers verified eligibility, a cover letter and study questionnaire were mailed to participants with a stamped, self-addressed return envelope. Return of the questionnaire indicated consent to participate. A postcard was sent to all individuals two weeks after the questionnaire was mailed to serve as a thank you to those who had returned the questionnaire and as a reminder for those who had not (Dillman, 2006). A follow-up postcard was sent as a final contact six to eight weeks after the questionnaire to those who had not yet returned the questionnaire.

Instruments

Demographic characteristics: Survivors were asked to complete a demographic questionnaire adapted from a tool used in a study of rural older adults (S. Beck, personal communication, February 28, 2005). Date of birth, ethnic background, racial background, marital status, length of time married (or cohabitating), level of education, current employment status, level of annual household income, religion, and adequacy of income were obtained. Additional data were collected about other health problems and the bothersome nature of health problems.

Illness characteristics: Survivors completed items relating to their illness characteristics, including the date of initial diagnosis, types and dates of treatment received (e.g., surgery, chemotherapy), date(s) of recurrence(s), dates and types of treatment received for recurrence, current treatment status, and performance status. The items were adapted from an illness characteristics tool

used in the principal investigator's pilot study (Ponto & Barton, 2008).

Symptom distress was measured with the Symptom Distress Scale (SDS) (McCorkle & Young, 1978). The SDS uses 13 items to measure common symptoms of cancer and cancer treatment. The measured symptoms include nausea, appetite, insomnia, pain, fatigue, bowel pattern, concentration, appearance, outlook, breathing, and cough. Internal consistency reliability for a sample of women with breast cancer and their spouses was 0.84 and 0.85, respectively (Northouse, Laten, et al., 1995). Internal consistency reliability (Cronbach alpha) for this study was 0.81.

Meaning: Survivor appraisal of the meaning of the ovarian cancer experience was measured with the Constructed Meaning Scale (Fife, 1995). The eight-item scale measures the effect of an illness on identity, relationships, and the future, with higher scores representing more positive meaning attributed to the illness. Cronbach alpha for this study was 0.76, which is consistent with previous work (Mellon & Northouse, 2001).

Adjustment to illness: Survivor adjustment to the ovarian cancer experience was measured with the Psychological Adjustment to Illness Scale–Self-Report (PAIS-SR) (Derogatis, 1986). The PAIS-SR is a 46-item questionnaire that measures an individual's psychosocial and social adjustment to illness. Seven domains are evaluated, including healthcare orientation, sexual relationships, role function, social support, and psychological distress. Items are scored on a four-point Likert scale, and higher total scores represent poorer adjustment. Cronbach alpha for this study was 0.77.

Growth: The experience of growth following the ovarian cancer experience was measured by the Post-Traumatic Growth Inventory, a 21-item questionnaire measuring trauma-related positive change on five scales: new possibilities (five items), relating to others (seven items), personal strength (four items), appreciation of life (three items), and spiritual change (two items) (Tedeschi & Calhoun, 1996). Items are scored on a six-point Likert scale, with higher scores indicating greater positive change. High internal reliability (0.95) has been demonstrated for women with breast cancer (Weiss, 2004) and those with ovarian cancer (ranging from 0.8–0.92) (Wenzel et al., 2002). Cronbach alpha for this study was 0.93.

Data Analysis

Data describing the characteristics of the sample and their recurrent ovarian cancer were analyzed with descriptive statistics. Pearson correlations were used to determine the relationship between continuous variables. Analysis of variance was used to determine differences between continuous and categorical data.

Hierarchic multiple regression was used to evaluate predictors of adjustment and growth. Only the variables significantly related to the outcome variables ($p < 0.05$) were included in the analysis. Significant demographic variables were entered first, followed by significant illness variables, followed by meaning. Post-hoc power analysis demonstrated 94% power to detect a large (0.35) effect and 57% power to detect a medium (0.15) effect with a sample of 60 women and five predictor variables.

Findings

Sample Demographic and Illness Characteristics

The sample consisted of 60 women with recurrent ovarian cancer. Demographic data are presented in Table 1. The mean age of the sample was 59 (SD = 8.95, range = 23–79 years). The average length of their current relationship with a spouse or partner was 31.6 years (SD = 12.9, range = 1–56). The sample consisted of mostly non-Hispanic (93%), Caucasian (97%), Protestant (47%), married (92%), educated (college, postgraduate, or professional) (54%) women who were either unemployed (8%), retired (45%), or full-time homemakers (13%). Most (67%) earned $60,000 per year or more and thought their income was comfortable (59%).

Many women had normal activity without symptoms (20%) or some symptoms requiring no additional rest (38%). However, another 38% required additional rest, but less than half their normal day. Most of the women had an elevated CA-125 level or known disease (64%). More than half of the women had experienced two or more disease recurrences (53%), and many had one additional chronic health problem (45%) or more than one additional health problem (30%). Slightly more than half were receiving treatment at the time of the study (53%), with 90% of those women receiving chemotherapy.

Main Research Variables

Table 2 presents the characteristics of each instrument measuring major study variables. Table 3 offers significant correlations between major study variables. Lower age and fewer years in the relationship were associated with poorer adjustment, as were greater activity limitations and symptom distress. Education, employment status, religion, income, disease state, current therapy, number of recurrences, and other health problems had no statistically significant relationship with adjustment. None of the study variables, including adjustment, had a statistically significant correlation with growth.

The meaning of the ovarian cancer experience showed a strong ($r = -0.72$) significant inverse correlation to adjustment. Because low meaning scores indicated negative meaning and higher adjustment scores indicated poorer adjustment, negative meaning was associated with poorer adjustment. Meaning was not significantly related to growth.

Predictors of Adjustment

With hierarchical multiple regression, statistically significant ($p < 0.05$) variables related to adjustment were entered into a regression equation to determine the contribution of each variable to the variance in adjustment. Age and years in the relationship were entered in the first block and accounted for 16.4% of variance ($p < 0.05$). Performance status and symptom distress were entered in the second block and accounted for an additional 41.4% of the variance in adjustment ($p < 0.001$). Meaning was entered in block three and accounted for an additional 6% of the variance in adjustment ($p < 0.001$) (see Table 4). A model of these five predictor variables, entered in three blocks, accounted for 64% of the variance in adjustment ($p < 0.001$) (see Figure 2).

Table 1. Demographic and Illness Characteristics

Characteristic	$\bar{X}$	SD	Range
Age (years)	59	8.9	23–79
Years in relationship	31.6	12.9	< 1–56
Time since diagnosis (months)	65.4	46	12–209
Time since first recurrence (months)	36.6	36.9	0–176

Characteristic	n	%
Ethnicity (N = 59)		
Not Hispanic, Latino, or Spanish origin	56	93
Hispanic, Latino, or Spanish origin	3	5
Race (N = 58)		
Caucasian	58	97
Marital status (N = 58)		
Married	55	92
Living together, not married	3	5
Education (N = 60)		
High school graduate	13	22
Some college	15	25
College graduate	13	22
Postgraduate or professional	19	32
Employment status (N = 60)		
Full-time	9	15
Part-time	11	18
Unemployed	5	8
Retired	27	45
Full-time homemaker	8	13
Religion (N = 59)		
Protestant	28	47
Catholic	17	28
Jewish	6	10
Mormon	2	3
Other	6	10
Income (U.S. dollars) (N = 58)		
50,000 or less	18	34
60,000–79,999	12	20
80,000–99,999	10	17
100,000 or more	18	30
Adequacy of income (N = 59)		
More than adequate	10	17
Comfortable	36	59
Problems making ends meet	13	22
Eastern Cooperative Oncology Group Performance Status (N = 59)		
Normal activity without symptoms	12	20
Some symptoms, no extra time resting	23	38
Rest less than half normal daytime	23	38
Rest more than half normal daytime	1	2
Current disease state (N = 60)		
No known ovarian cancer	22	37
High CA-125 or known site of ovarian cancer	38	64
Number of recurrences (N = 59)		
One	27	45
Two or more	32	53
Receiving treatment currently (N = 59)		
Yes	32	53
No	27	45
Type of current therapy (N = 32)		
Chemotherapy	29	90
Radiation	1	3
Surgery and chemotherapy	2	6
Other healthcare problems (N = 59)		
More than one	18	30
One	25	45
None	16	27

Note. Because of rounding, not all percentages total 100.

Discussion

This study evaluated variables predicting adjustment and growth in women with recurrent ovarian cancer. Age, years in the relationship, symptom distress, performance status, and meaning of the illness were significant predictors of adjustment. Symptom distress and performance status contributed the most to the prediction model, with meaning of illness making a small but significant additional contribution.

The findings from this study are particularly important given the paucity of literature related to adjustment in women with recurrent ovarian cancer. Aspects of the resiliency and family survivorship models guided this study, and findings support the relevance of the models in this population. Contextual demographic variables (e.g., age, years in the relationship), illness stressor severity variables (e.g., symptom distress, performance status), and the appraisal of the illness (e.g., meaning) are pertinent predictors of adjustment in this population and provide a framework for future research.

Demographic Characteristics

Although the literature contains inconsistent reports regarding the role of age as a predictor of adjustment in cancer survivors, even among survivors of recurrent cancer (Mellon & Northouse, 2001; Northouse, Dorris, et al., 1995), age was a predictor of adjustment in the current study. Age also was significantly correlated with symptom distress; younger women had more distress. Whether younger age consistently predicts poorer adjustment in women with recurrent ovarian cancer can be confirmed in additional research in this population.

Unlike previous research (Northouse, Dorris, et al., 1995; Northouse, Laten, et al., 1995), level of education was not found to be related to adjustment in this study. In addition, number of years married was found to be related to adjustment in the present study, though not significantly related in another study (Northouse, Dorris, et al., 1995). The women in the current study were married an average of five years longer than those in previous studies, which may account for the differences.

Table 2. Characteristics of Study Instruments

Characteristic	CMS	PAIS	PTGI	SDS
$\bar{X}$	19.6	58.37	65.2	26
SD	4.1	9.7	20.9	7.2
Actual range of scores	10–31	33–74	0–97	13–48
Possible range of scores	8–32	23–75	0–105	13–65
Number of items	8	46	21	13
Cronbach alpha	0.76	0.77	0.93	0.81

CMS—Constructed Meaning Scale (higher scores indicate more positive meaning); PAIS—Psychological Adjustment to Illness Scale (higher scores indicate poorer adjustment); PTGI—Post-Traumatic Growth Inventory (higher scores indicate more growth); SDS—Symptom Distress Scale (higher scores indicate greater symptom distress)

Illness Severity Stressor Characteristics

Consistent with previous research, women in this study who experienced more symptom distress had poorer adjustment to their illness (Mellon & Northouse, 2001; Northouse, Dorris, et al., 1995). Effectively preventing or treating symptoms related to the disease or treatment may significantly improve the ability of such women to adjust to their disease.

Past studies in individuals with cancer have found that current therapy was related to poorer adjustment (Northouse, Dorris, et al., 1995; Northouse, Laten, et al., 1995). The lack of significance in the current study may reflect that women with recurrent ovarian cancer perceive cancer treatment as a hopeful and positive option given the high mortality rate of recurrent ovarian cancer. Moreover, despite the increase in symptoms associated with treatment, women with recurrent ovarian cancer may believe that they have a better chance of surviving the disease because they are receiving treatment.

Performance status as a predictor of poorer adjustment is a unique contribution to the literature on recurrent cancer. Performance status also had a significant inverse relationship to meaning and symptom distress. Lower performance status was associated with more negative meaning of the illness and more symptom distress. This constellation of illness effects and the need for additional rest may reflect a return or worsening of the disease or serious treatment effects, which negatively influence adjustment to the illness. Whether women with recurrent cancer have more performance status problems than other recurrent cancer populations is unknown, but this also may account for the role of performance status as a predictor of adjustment in this population.

Meaning of Illness

The women in this study sample had a more negative appraisal of meaning of the illness compared to other cancer populations without recurrences (Mellon, Northouse, & Weiss, 2006). Although the groups are not comparable, the observation may suggest that women with recurrent ovarian cancer are at risk for more negative meaning of the illness. Whether women with recurrent ovarian cancer have more negative meaning of the illness than those with recurrence of other cancers is unknown; however, given the unrelenting nature of recurrent ovarian cancer and known mortality rate, ascribing a more negative meaning to the experience is understandable.

Meaning of the illness was a significant though relatively weak predictor of adjustment in women with recurrent ovarian cancer. The women who are able to describe more positive meaning to the illness experience may have better adjustment to the experience. Identifying ways to facilitate positive meaning within the experience of recurrent ovarian cancer may benefit some women with the disease.

Growth

Despite having recurrent ovarian cancer, women in this study reported having grown from the experience. The mean growth score was higher for women in this study (65.2) than in some studies of women with breast cancer ($\bar{X}$ = 58.4 and 55.7, respectively) (Manne et al., 2004; Weiss, 2004); however, the mean growth score was consistent with a study of breast cancer survivors ($\bar{X}$ = 64.1) by Cordova et al. (2001) and a study of adult daughters of breast cancer survivors ($\bar{X}$ = 65.5) (Mosher, Danoff-Burg, & Brunker, 2006). Given

Table 3. Significant Correlations Between Study Variables

Variable	1	2	3	4	5	6
1. Age	1	–	–	–	–	–
2. Years in relationship	0.621***	1	–	–	–	–
3. Symptom distress	–0.374**	–0.268*	1	–	–	–
4. Performance status	–0.259*	–0.231*	0.679***	1	–	–
5. Meaning	0.374**	0.24*	–0.668***	–0.628***	1	–
6. Adjustment[a]	–0.404***	–0.266*	0.71***	0.649***	–0.72***	1

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

[a] Higher scores indicate poorer adjustment.

Table 4. Hierarchical Regression Analysis of Predictors of Adjustment

Variable	B	SEB	β	R^2	Δ R^2
Block 1	–	–	–	0.164	0.164
Age	–0.606	0.565	–0.121	–	–
Years in relationship	0.069	0.371	0.02	–	–
Block 2	–	–	–	0.578	0.414
Symptom distress	1.864	0.793	0.299	–	–
Activity	11.043	6.859	0.194	–	–
Block 3	–	–	–	0.64	0.062
Meaning	–3.934	1.32	–0.359	–	–

the relatively high growth scores in this study, the lack of a relationship between growth and other study variables, including adjustment, is intriguing. The data suggest that growth is not predicted by the variables in this study for women with recurrent ovarian cancer. Because this is the first study of post-traumatic growth in women with recurrent ovarian cancer, future research may better ascribe the concept of growth and explore other predictors, such as coping styles and the traumatic effect of the illness. In addition, further validation studies with this tool may help clarify whether it is an appropriate measure for this population or whether alternative instruments to measure positive outcomes of the experience are warranted.

Limitations

This study was limited by a cross-sectional design and relatively homogeneous sample. Future research incorporating longitudinal designs and diverse samples could describe changes in study variables over time and clarify the findings in diverse populations. The sampling procedures may have resulted in selection bias, and how the results apply to nonpartnered women is unclear. Lastly, this study was underpowered to detect a small or moderate effect size.

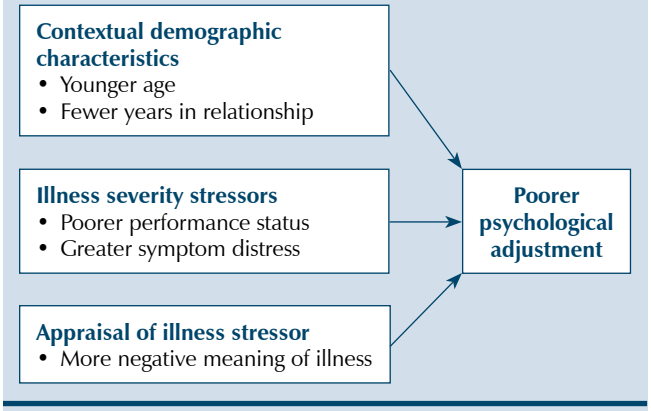

Figure 2. Predictors of Adjustment to Recurrent Ovarian Cancer

Implications for Nurses

This study provides important implications for nurses. Younger age and fewer years in the relationship were significant predictors of poorer adjustment. Although these characteristics are not modifiable through nursing interventions, nurses can recognize the risk for poorer adjustment in younger women and assess the effect of the illness and the need for additional information or resources to help women adjust to their illness. In addition, women in relationships fewer years may need additional support or assistance in communicating with their spouses about the effects of the illness, and nurses can help identify sources of support and counsel women in communication strategies.

The importance of symptom distress and poorer performance status in predicting adjustment has direct implications for nursing interventions. Nurses are in a key position to anticipate, prevent, and manage symptoms, such as fatigue and nausea, in this population. Preventing or reducing the severity of symptoms and related distress may result in better adjustment and significantly improve women's lives by improving their ability to carry out daily activities and role functions. In addition, providing interventions to reduce the effects of the disease and treatment on activity level could profoundly improve women's adjustment and the negative meaning associated with the illness.

Having more positive meaning of the illness predicted better adjustment in women with recurrent ovarian cancer. Nurses may facilitate more positive meaning of the illness experience by facilitating women's discovery of the positive aspects of their lives and by reducing symptoms, losses, and the resulting negative effects of the illness.

Women are living longer with recurrent ovarian cancer. This study provides an important contribution regarding predictors of adjustment in women with recurrent ovarian cancer, particularly demographic, illness, and appraisal characteristics.

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