The Relationship Between Symptom Severity and Symptom Interference, Education, Age, Marital Status, and Type of Chemotherapy Treatment in Israeli Women With Early-Stage Breast Cancer

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In 2007, more than 4,000 women were newly diagnosed with breast cancer in Israel (Israeli National Cancer Registry, 2010). Many women with early-stage breast cancer are being offered adjuvant chemotherapy; however, patients receiving chemotherapy often experience bothersome symptoms (Stanton, Bernaards, & Ganz, 2005). Patients report the distressing symptoms of cancer to clinicians as the subjective feelings of physical and mental changes produced by their disease and its treatment. Patients with cancer typically experience multiple symptoms concurrently (Lee et al., 2004), which is true of women receiving adjuvant chemotherapy for breast cancer. The symptoms include fatigue, sleep disturbances, weight gain, mild memory loss, and premature menopause (Byar, Berger, Bakken, & Cetak, 2006; Schultz, Klein, Beck, Stava, & Sellin, 2005; Stanton et al., 2005).

Symptom Severity and Breast Cancer

Women at the end of their adjuvant treatment can still experience symptoms but have fewer opportunities to be in contact with their professional caregivers. In addition, nonspecific symptoms such as pain, fatigue, sleep disturbance, emotional distress, and poor appetite typically are not monitored as closely as treatment toxicities in the clinical setting; as a result, appropriate symptom management often is not addressed (Cleeland, 2007).

An Israeli study reported on menopausal symptoms in women with breast cancer; however, the study was conducted several years after the women were diagnosed (Mannor & Zohar, 2006). No studies were found that examined symptom severity in Israeli women with early-stage breast cancer receiving adjuvant chemotherapy.

Purpose/Objectives: To examine symptom severity's relationship to symptom interference, education, age, marital status, and type of chemotherapy treatment in Israeli women with stage I or II breast cancer.

Design: Cross-sectional, descriptive, correlational design.

Setting: Hadassah University Hospital's oncology daytime care unit in Israel.

Sample: 51 women with stage I or II breast cancer who were receiving an adjuvant chemotherapy protocol that included doxorubicin.

Methods: Women receiving adjuvant chemotherapy were given the M.D. Anderson Symptom Inventory (MDASI), a modified version of the Breast Cancer Prevention Trial Hot Flashes Subscale (BCPT-HFS), and a demographic and treatment questionnaire to assess their symptoms toward the end of their chemotherapy treatment.

Main Research Variables: Symptom severity, symptom interference, education, age, marital status, and type of chemotherapy treatment.

Findings: The most frequent and severe symptoms were fatigue, sleep disturbance, and drowsiness. The MDASI symptom severity total scores were positively correlated with total scores of interference with activities of daily life, with most individual symptoms being significantly related to the total interference scores. The strongest relationships were found with fatigue, distress, and sadness. Education was inversely related to the MDASI general symptom severity total scores; age was inversely related to the BCPT-HFS total scores. Patients who received treatment with doxorubicin plus cyclophosphamide or doxorubicin, cyclophosphamide, plus fluorouracil had greater symptom severity than those who received doxorubicin plus cyclophosphamide followed by paclitaxel and had their symptoms evaluated after receiving paclitaxel.

Conclusions: Increased symptom severity disrupts daily function and life in women with breast cancer.

Implications for Nursing: Evidence-based symptom profiles for different chemotherapy protocols are needed.

Symptom Interference

Symptom severity has a serious impact on patients' daily lives. However, clinicians often underestimate patients' symptom severity and activity interference (Ivanova et al., 2005). A relationship between symptom severity and symptom interference in daily activities has been demonstrated in studies that included inpatient and outpatient settings (Cleeland et al., 2000) and specific cancers (Wang, Fairclough, et al., 2006). Although studies have investigated the impact of the symptoms on quality of life in women with breast cancer, they have not examined the way the symptoms interfere with daily living. Little research has examined the symptom severity of Israeli patients diagnosed with early-stage breast cancer and the impact of the symptoms on the women's daily lives.

Education, Age, and Marital Status

Three demographic variables that may influence symptom severity are education, age, and marital status. In a large study of patients with breast cancer at varying time periods after diagnosis and treatment, education, age, and marital status were significantly related to symptom severity (Stanton et al., 2005). The study found that women with less education were more bothered by symptoms than women with more education. Stanton et al. (2005) also found that the age and marital status of women diagnosed with breast cancer influenced their symptom severity. No published research was found that examined education, age, and marital status and their influence on symptom severity in Israeli women with early-stage breast cancer.

Chemotherapy Treatment

Chemotherapy treatment has demonstrated a role in symptom severity. Women with breast cancer who received chemotherapy were more likely to be bothered by symptoms than those who did not receive chemotherapy (Stanton et al., 2005). However, Stanton et al. (2005) did not differentiate between chemotherapy treatment protocols or time points at which the women received chemotherapy treatment. One study (Bottomley et al., 2004) was found that examined the symptom profile of patients with breast cancer receiving two different chemotherapy protocols, but it was conducted among a group of patients with metastatic disease. A qualitative study examining symptom experience and symptom distress among patients with breast cancer receiving chemotherapy (Boehmke & Dickerson, 2005) compared differences in symptoms experienced by women receiving different drugs but did not provide a comprehensive description of the symptoms they experienced. No Israeli studies were found that described the symptom profile of the different adjuvant chemotherapy drugs received by women with early-stage breast cancer.

As a result of the gaps in the literature, the current study examined the relationship between symptom severity and symptom interference, education, age, marital status, and type of chemotherapy treatment in Israeli women with stage I or II breast cancer.

Theoretical Framework

Armstrong's (2003) Model of Symptoms Experience was the conceptual model used to frame the current study. The Symptoms Experience Model recognizes three dimensions in the symptom experience: antecedent factors (factors that affect the experience of the symptom), symptom perception (frequency, intensity, distress, and meaning of the symptom), and consequences of the symptom. The current study examined components of the perception of a group of symptoms (symptom frequency and intensity) in women with early-stage breast cancer and their perceived meaning of the impact of the symptoms (symptom interference). In addition, the current study investigated the relationship between the intensity of the symptoms (symptom severity) and selected antecedent factors (education, age, marital status, and type of chemotherapy) that have demonstrated a relationship with a person's symptom perception.

Methods

Design

The current research was a cross-sectional, descriptive, correlational study. Relationships were examined between the main variable (symptom severity) and symptom interference, education, age, marital status, and type of treatment.

Sample

A convenience sample of 51 patients was drawn from a population of women with early-stage (stage I or II) breast cancer receiving doxorubicin-based adjuvant chemotherapy in an ambulatory unit at a major medical center in Israel. A significant Pearson's r relationship at the 0.05 level with a medium effect size of 0.4 and a power of 0.8 may be detected with a sample of 50 patients (Polit & Beck, 2008). Inclusion criteria were Hebrew-speaking women with stage I or II breast cancer receiving an adjuvant chemotherapy protocol that included doxorubicin, the standard treatment in the medical center where the study was conducted.

Instruments

Three questionnaires were used to collect data. The **M.D. Anderson Symptom Inventory (MDASI)–Hadassah**

Hebrew Version was used to measure symptom severity and symptom interference. The MDASI is a short questionnaire that examines the severity of cancer-related symptoms and interference within the past 24 hours (Cleeland et al., 2000). The questionnaire includes two subscales: the symptom severity scale and the symptom interference scale. The symptom severity scale consists of 13 core symptoms that are considered the most distressing for patients during and after treatment. The symptom interference scale consists of six items that measure a person's perceived interference of the symptoms on different aspects of daily life, including interference with general activity, mood, work (e.g., work around the house), relations with other people, walking, and enjoyment of life. In the symptom severity scales, each symptom is rated on an 11-point scale, ranging from 0 (not present) to 10 (as bad as you can imagine). The interference subscale items also are rated in the same way but with different anchor words, with 0 meaning "did not interfere" and 10 "interfered completely." The MDASI was translated and back translated by people who were fluent in Hebrew and English until agreement was reached.

The MDASI's list of core symptoms was validated by factor analysis (Cleeland et al., 2000). Validity also has been established in several languages, including Chinese (Wang et al., 2004), Filipino (Wang, Laudico, et al., 2006), Greek (Mystakidou et al., 2004), Japanese (Okuyama et al., 2003), Korean (Yun et al., 2006), and Russian (Ivanova et al., 2005). The MDASI's two subscales possess good reliability, with Cronbach alpha coefficients of 0.87 for the symptom severity scale and 0.91 for the symptom interference scale (Wang et al., 2004). Reliability for the MDASI was 0.83 for the severity scale and 0.87 for the interference scale.

The **Breast Cancer Prevention Trial Hot Flashes Symptom Subscale (BCPT-HFS)** is a questionnaire that measures physical symptoms in women diagnosed with breast cancer or at risk for breast cancer (Stanton et al., 2005). The original questionnaire possesses eight subscales, each with its own Cronbach alpha coefficient. The subscale relevant for this study was the BCPT-HFS, which possesses two items: one on hot flashes and one on night sweats. The original questionnaire assesses symptoms over a four-week period on a five-point severity scale ranging from 0 (not all) to 4 (extremely). The two items were modified to reflect the 0–10 grade range of the MDASI as well as its anchor words, ranging from 0 (not present) to 10 (as bad as you can imagine). Similar to the MDASI, the BCPT-HFS asks patients to assess symptoms in the past 24 hours. The Hebrew version of the HFS underwent a similar translation and back translation process as the MDASI. The Cronbach alpha coefficient for the modified Hebrew version was 0.81.

Demographic and treatment questionnaire items included age, marital status, education, and place of birth. Women also were asked about their menopausal status (i.e., whether or not they had their period before chemotherapy treatment and whether their period stopped after treatment). Women also were asked whether their chemotherapy protocol included paclitaxel.

Procedure

The study was approved by the institutional review board. Data collection was conducted by the primary researcher. Nurses in the daytime-care oncology unit identified participants who met the research criteria. Before entering patients into the study, the researcher reviewed their charts to verify the chemotherapy protocols. The research purpose was explained to the women; if they agreed to participate, informed consent was obtained and patients were given the research questionnaires and instructions on filling them out. Patients were asked to evaluate their symptom severity and interference in the 24 hours after their second to last treatment and to return the completed questionnaires when they

Table 1. Participant Demographic and Treatment Characteristics

Characteristic	$\overline{X}$	SD
Age (years)	50.4	11.8

Characteristic	n	%
Place of birth		
Israel	38	75
Asia or Africa	3	6
Western Europe	10	20
Jewish	51	100
Marital status		
Single	4	8
Married	38	75
Divorced	7	14
Widowed	2	4
Education		
Elementary school	1	2
High school	13	25
Diploma	10	20
Undergraduate degree	16	31
Graduate degree	11	22
Menstrual history		
Had menstrual period before treatment	28	55
• Menstrual period stopped intermittently during treatment	24	86[a]
Treatment		
Received doxorubicin and cyclophosphamide or doxorubicin, cyclophosphamide, and fluorouracil	6	12
Received doxorubicin and cyclophosphamide followed by paclitaxel	45	88

N = 51

[a] Calculated based on the 28 women who had their menstrual period before treatment started

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

came for their final treatment. If the women wanted a reminder, the research nurse called to remind them to fill out the questionnaires. Because of technical issues, a small group (n = 9) filled out their questionnaires after the second paclitaxel treatment and not after the third treatment.

Statistical Analysis

Data were analyzed with SPSS® version 12. Descriptive statistics were used to express the sample's demographic and treatment characteristics, as well as symptom severity and symptom interference. Pearson's r analysis was used to identify relationships between symptom severity and symptom interference and age; Spearman's rho was used to examine the relationship between symptom severity and education. Independent t-test analysis was conducted to distinguish differences between the symptom severity of the groups that did and did not receive paclitaxel and differences between symptom severity in married and unmarried women. Cronbach coefficient alpha was

used to determine the reliability of the MDASI scales and the BCPT-HFS.

Results

The study sample consisted of 51 Jewish women. Mean age of the women was 50.4 years (SD = 11.8). Most were married and had obtained an undergraduate or graduate degree. Fifty-five percent still had a menstrual period before treatment. However, 86% no longer had a menstrual period or it became intermittent once the women started treatment (see Table 1).

The three most frequent and severe symptoms on the MDASI severity scale were fatigue (f = 94%; $\overline{X}$ = 5.3), sleep disturbance (f = 88%; $\overline{X}$ = 4.9), and drowsiness (f = 78%; $\overline{X}$ = 4.7), followed by the affective symptoms of distress (f = 78%; $\overline{X}$ = 4.1) and sadness (f = 77%; $\overline{X}$ = 4.1). Menopausal symptoms of hot flashes (f = 63%; $\overline{X}$ = 4.2) and night sweats (f = 57%; $\overline{X}$ = 3.7) also were experienced by most women. The symptom interference items with highest mean scores toward the end of the

Table 2. Reported Severity of Breast Cancer Symptoms in Israeli Women Receiving Chemotherapy

Symptom	$\overline{X}$	SD	None n	None %	Mild n	Mild %	Moderate n	Moderate %	Severe n	Severe %
MDASI Severity Scale										
Fatigue	5.3	3	3	6	17	33	9	18	22	43
Sleep disturbance[b]	4.9	3.3	6	12	20	39	6	12	18	35
Drowsiness	4.7	3.3	11	22	11	22	11	22	18	35
Distress	4.1	3.5	11	22	20	39	6	12	14	28
Sadness[b]	4.1	3.7	12	24	17	33	5	10	16	31
Dry mouth	4	3.5	13	25	16	31	8	16	14	27
Pain	3.7	3.7	18	35	12	24	8	16	13	25
Numbness[b]	3.2	3.8	22	43	13	25	3	6	12	24
Poor appetite[b]	2.6	3	23	45	12	24	7	14	8	16
Nausea	2.3	3.3	26	51	14	27	2	4	9	18
Difficulty remembering	2.3	2.4	20	39	21	41	7	14	3	6
Shortness of breath	1.3	2.1	31	61	16	31	3	6	1	2
Vomiting	0.8	2.3	43	84	4	8	1	2	3	6
BCPT-HFS										
Hot flashes[b]	4.2	3.9	19	37	6	12	6	12	19	37
Night sweats[b]	3.7	3.9	22	43	10	20	3	6	15	29
MDASI Interference Scale										
Work (including housework)[b]	6	3.1	3	6	12	24	13	25	22	43
General activity	5.2	3.2	4	8	18	35	6	12	23	45
Walking	4.8	3.7	10	20	15	29	6	12	20	39
Enjoyment of life	4.7	3.6	9	18	16	31	7	14	19	37
Mood	4.3	3.1	9	18	19	37	8	16	15	29
Relations with others	3.3	3.1	13	25	24	47	5	10	9	18

N = 51

[a] Scores ranged from 0 (none), 1–4 (mild), 5–6 (moderate), to 7–10 (severe).

[b] Not all participants completed all items.

BCPT-HFS—Breast Cancer Prevention Trial Hot Flashes Subscale; MDASI—M.D. Anderson Symptom Inventory

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

Table 3. Bivariate Correlations Between Individual Symptoms and Total Symptom Interference

Variable	Pearson r	p
M.D. Anderson Symptom Inventory		
Fatigue	0.76	< 0.001
Distress	0.59	< 0.001
Sadness	0.54	< 0.001
Drowsiness	0.52	< 0.001
Pain	0.45	0.001
Poor appetite	0.43	0.001
Numbness	0.43	0.002
Dry mouth	0.36	0.009
Sleep disturbance	0.35	0.011
Shortness of breath	0.29	0.039
Nausea	0.23	0.105
Vomiting	0.17	0.21
Difficulty remembering	0.14	0.327
Breast Cancer Prevention Trial Hot Flashes Subscale		
Night sweats	0.29	0.44
Hot flashes	0.01	0.94

chemotherapy treatment were work ($\overline{X}$ = 6) and general activity ($\overline{X}$ = 5.2) (see Table 2).

Among the 13 core symptoms with the strongest bivariate relationships between individual symptoms were distress and sadness (r = 0.85, p < 0.001), followed by fatigue and distress (r = 0.6, p < 0.001).

Symptom Severity and Symptom Interference

A strong relationship was found between the total mean score of the MDASI symptom severity scale and the symptom interference scale (r = 0.71, p < 0.001). However, no significant relationship was found between the BCPT-HFS's total mean score and the MDASI symptom interference scale (r = 0.16, p = 0.26). When individual symptom severity items and symptom interference were examined, all of the relationships were significant except for nausea, vomiting, difficulty remembering things, and hot flashes. However, the strongest relationships were observed between symptom interference and fatigue (r = 0.76, p < 0.001), followed by distress (r = 0.59, p < 0.001), sadness (r = 0.54, p < 0.001), and drowsiness (r = 0.52, p < 0.001) (see Table 3).

Symptom Severity and Education, Age, and Marital Status

A significant relationship between the MDASI symptom severity total mean score and education was identified (r_s = –0.41, p < 0.01). Patients with more education evaluated their symptoms as less severe. However, no relationship was found between menopausal symptoms and education (r_s = 0.13, p = 0.39). The opposite was true with age. No significant

relationship was found between the MDASI symptom severity total mean score and age (r = –0.22, p = 0.12); however, a significant relationship was found between age and menopausal symptoms (r = –0.28, p < 0.05). Younger patients were more likely to experience menopausal symptoms. No differences were found between marital status and symptom severity on either the MDASI (t = –0.097, p = 0.92) or the BCPT-HFS (t = 0.629, p = 0.53).

Symptom Severity and Treatment

The difference in the total mean score of the MDASI symptom severity scale and whether or not women received paclitaxel showed a trend toward significance (p = 0.09). Patients who only received doxorubicin plus cyclophosphamide or doxorubicin plus cyclophosphamide plus fluorouracil and evaluated their symptoms after the treatments had more severe symptom scores ($\overline{X}$ = 4.55) than those who reviewed their symptoms after receiving paclitaxel ($\overline{X}$ = 3.16). However, the number of women whose symptoms were evaluated after receiving doxorubicin plus cyclophosphamide or doxorubicin plus cyclophosphamide plus fluorouracil were small (n = 6). No relationship was found between menopausal symptom severity and type of treatment (see Table 4).

Discussion

Symptom Severity and Frequency

In the current study's examination of the severity and frequency of symptoms in women receiving chemotherapy for early-stage (I or II) breast cancer, the most prevalent and severe symptom was fatigue. The finding is corroborated by studies examining the symptom severity of patients receiving chemotherapy (Cleeland et al., 2000; Ivanova et al., 2005; Wang et al., 2004) and, more specifically, studies conducted

Table 4. Relationship Between Symptom Severity Scores and Type of Treatment

Scale	Protocol 1 or 2 (N = 6)		Protocol 3 (N = 45)[a]			
	$\overline{X}$	SD	$\overline{X}$	SD	t	p
MDASI	4.55	2.24	3.16	1.77	1.75	0.09
BCPT-HFS	3.5	4.11	3.97	3.58	–0.3	0.76

[a] Data were missing from one participant on the BCPT-HFS.

BCPT-HFS—Breast Cancer Prevention Trial Hot Flashes Subscale; MDASI—M.D. Anderson Symptom Inventory

Note. Protocol 1 = doxorubicin plus cyclophosphamide; protocol 2 = doxorubicin, cyclophosphamide, plus fluorouracil; protocol 3 = doxorubicin plus cyclophosphamide followed by paclitaxel

Note. Higher mean scores indicate greater symptom severity.

among patients with breast cancer receiving adjuvant chemotherapy (Boehmke, 2004; Manning-Walsh, 2005).

Sleep disturbance was the second most severe and frequent symptom reported by the current study's participants. Women with breast cancer receiving adjuvant chemotherapy have reported intense sleep disturbance prior to and following each chemotherapy treatment (Byar et al., 2006). Sleep disturbance in the current sample may have been, in part, the result of the antiemetic protocol, which included steroids. The women's sleep disturbances also may have been related to menopausal symptoms. The menopausal symptom of hot flashes has demonstrated a significant positive relationship with sleep disturbance among patients with breast cancer (Schultz et al., 2005). In addition, 37% of women in the current study experienced severe hot flashes, which may have caused sleep disturbances.

The affective symptoms of distress and sadness were among the five most severe symptoms rated in the current study. Distress and sadness levels ($\bar{X}$ = 4.1 for both symptoms) were higher than those measured in patients receiving chemotherapy in the United States (distress = 3.79; sadness = 3.09) (Cleeland et al., 2000), Russia (distress = 2.5; sadness = 2.5) (Ivanova et al., 2005), and China (distress = 4.1; sadness = 3.1) (Wang et al., 2004). The only study that showed higher levels of distress was a Greek study; however, about 66% of the patients had metastastic disease (Mystakidou et al., 2004). A possible cultural element may have been present in the expression of distress. A study examining post-treatment distress among patients found that racial status other than Caucasian was associated with higher levels of all types of cancer-related distress (Jim, Andrykowski, Munster, & Jacobsen, 2007). The high level of distress detected in the current study also may have been associated with fatigue. A study that examined anxiety and depression in women with stage I or II breast cancer receiving doxorubicin-based adjuvant chemotherapy observed that women's depression and anxiety scores significantly increased from their pretreatment baseline scores after their fourth chemotherapy treatment (Byar et al., 2006). Byar et al. (2006) also found a strong relationship between fatigue and anxiety and depression at the end of the fourth treatment.

Symptom Severity and Symptom Interference

The current study identified a significant relationship between symptom severity and interference with activities of daily living. Although most of the symptoms showed a strong relationship with symptom interference, the strongest relationships were seen with fatigue, distress, and sadness. The findings are similar to a study conducted among patients with stage II–IIIB non-small cell lung cancer receiving concurrent chemoradiation (Wang, Fairclough, et al., 2006). Wang, Fairclough, et al.

(2006) found a similar relationship between symptom severity and symptom interference; in addition, they also found that fatigue, distress, and sadness were the strongest predictors of total interference. Of interest, the two affective items, distress and sadness, were the symptoms that most closely related to interference with daily life.

Symptom Severity and Education, Age, and Marital Status

In the current study, education was inversely related to the severity of general symptoms (MDASI). Stanton et al. (2005) also found that patients who had less education were more likely to be bothered by symptoms than those with a higher level of education. Stanton et al. (2005) postulated that education was frequently used as an indicator of socioeconomic status and that women with lower socioeconomic status may not have the same resources as women with higher education.

Age was inversely related to the menopausal symptoms subscale of hot flashes. Stanton et al. (2005) had similar results in their large study of women with breast cancer at different stages (one month to 10 years after diagnosis), finding that younger women with breast cancer had higher scores on the scale. No significant relationship was found between age and general symptoms. However, a positive trend was observed, with older patients tending to experience an increased symptom burden. Another breast cancer study (N = 100) also found no relationship between age and symptom distress (Manning-Walsh, 2005).

Although Stanton et al. (2005) found a significant relationship between marital status and a number of their symptom subscales in their study of 2,000 women with breast cancer, no significant differences were detected in the current study. The finding may have been a result of the small sample size and the disproportionate number of women who were married (75%).

Type of Treatment and Symptom Severity

Women at the end of the chemotherapy protocol with doxorubicin plus cyclophosphamide or doxorubicin plus cyclophosphamide plus fluorouracil had higher total mean scores on the MDASI than women at the end of treatment with paclitaxel (3.16 versus 4.55). Because the number of women who did not receive paclitaxel was too small, the result should be treated with caution. However, the finding may highlight the need to develop symptom profiles for different chemotherapy drugs.

Limitations

The current study was limited by the small sample size. A small number of patients were evaluated after the second paclitaxel treatment and not after the third

treatment. Timing of the data collection, namely 24 hours after chemotherapy, did not always accurately reflect some women's symptom severity because they reported feeling worse after the 24-hour study time frame. A longitudinal study is preferred to a cross-sectional study to identify changes in symptom severity over time.

Implications for Research and Practice

The current study's findings indicate that women at the end of treatment with doxorubicin plus cyclophosphamide or doxorubicin plus cyclophosphamide plus fluorouracil experience more severe symptoms than women at the end of paclitaxel treatment. The finding may identify a need to develop the symptom profiles of different chemotherapy treatment protocols and tailor nursing care plans to reflect the difference in symptom profiles. Additional research is needed to support that assumption. Symptom severity should be examined at different time periods between treatment cycles because differences may exist in symptom profiles between different time points. A breast cancer module of symptoms should be developed and added to the MDASI list of symptoms, particularly because breast cancer is the most prevalent cancer among women in Israel.

Understanding the physical and psychological symptoms experienced by patients with breast cancer and the way the symptoms affect patients' daily lives and functioning is essential to providing tailored care and developing symptom protocols. The MDASI has been demonstrated as a reliable questionnaire for Hebrew speakers. Routine use of this practical and simple-to-use scale may promote symptom management and encourage the establishment of clinical guidelines (Wang, Laudico, et al., 2006).

Conclusions

Symptoms caused by chemotherapy treatment disrupt the daily function and lives of women with early-stage breast cancer. The greatest level of interference experienced by the sample involved work, including work around the house. The demographic variables education and age also influenced symptom severity. Finally, although not significant, symptom severity after doxorubicin plus cyclophosphamide or doxorubicin plus cyclophosphamide plus fluorouracil appeared to be more severe than after paclitaxel.

The current study provided additional evidence of the MDASI's usefulness across various cultures and languages (Wang, Laudico, et al., 2006). The Hebrew version of the MDASI was found to have good reliability in the current study. With the growing awareness among healthcare providers of the need for professional evidence-based symptom management, the MDASI offers a structured, systematic, and evidence-based way of assessing cancer symptoms as a part of symptom management (Kirkova et al., 2006). The findings identify symptoms that are experienced frequently by women with breast cancer and will contribute to future protocol development to ameliorate the symptoms.

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