Symptom Experience in Older Adults Undergoing Treatment for Cancer

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Adults aged 65 years or older represent 14% (43.1 million people) of the U.S. population, and by 2040, older adults will represent 21% of the population (Administration on Aging, 2013). Older adults account for the majority of cancer diagnoses (American Cancer Society, 2015) because about 63% of all cancers are diagnosed in people aged 65 years or older (Surveillance, Epidemiology, and End Results Program, 2015). However, few studies specifically focus on the symptom experience of older adults undergoing chemotherapy treatment for cancer or the symptom experience within the context of aging, which is critical because the cancer experience will likely be influenced by comorbidities, functional limitations, and other declines associated with aging.

Complications from cancer treatment are more common in older adults compared to younger adults (Balducci & Stanta, 2000). Aging and associated limitations in organ systems prolong plasma levels of chemotherapy (e.g., renal, gastrointestinal, and liver dysfunction) (Jakobsen & Herrstedt, 2009; Sawhney, Sehl, & Naeim, 2005; Sehl, Sawhney, & Naeim, 2005). An increased risk of treatment-related toxicity and poor outcomes exists for older adults, including development of comorbidity, polypharmacy, functional and physical limitations, and poorer emotional status (Balducci, Colloca, Cesari, & Gambassi, 2010; Jakobsen & Herrstedt, 2009). The majority of older adults already report at least one comorbid condition (e.g., arthritis, heart disease, diabetes) (Administration on Aging, 2013). Older adults with a history of cancer report more comorbid conditions compared to people without cancer (seven versus five, respectively) (Bender et al., 2008). Other studies have shown that older adults receiving cancer treatment report functional loss (Given, Given, Azzouz, & Stommel, 2001; Goodwin, 2007; Kurtz, Kurtz, Given, & Given, 2006), and adults with more treatment-related symptoms report poorer functioning and quality of life than adults with fewer symptoms (Cheng & Yeung, 2013; Miaskowski et al., 2006). In some older populations, a higher number of treatment-

Purpose/Objectives: To explore the symptom experience of older adults receiving cancer chemotherapy in an outpatient treatment setting.

Design: Exploratory, descriptive, cross-sectional study.

Setting: A community cancer center in the southeastern United States.

Sample: 100 adults aged 65 years or older undergoing treatment for cancer.

Methods: Data were collected from participants at a chemotherapy treatment visit using structured questionnaires. Descriptive statistics were used to examine data. T tests and analysis of variance were used to compare symptoms among groups, and Pearson correlations were used to examine relationships among variables.

Main Research Variables: Cancer treatment–related symptoms, comorbid illnesses, mental health function, and physical function.

Findings: Older adults experience a high number of cancer treatment–related symptoms with moderate severity. The most common symptoms included fatigue, bowel disturbances, lack of appetite, hair loss, and drowsiness. Numbness and tingling were the most severe symptoms experienced. The presence of comorbid illness and poor mental functioning affects the number of symptoms experienced.

Conclusions: Opportunities exist for clinicians to take steps to assess and manage symptoms common to older adults before serious complications and negative outcomes occur. Future research is needed.

Implications for Nursing: Nurses should consider comorbidities and poor mental functioning in older adults when assessing treatment-related symptoms. Being proactive and assessing and managing symptoms early during treatment may improve outcomes for older patients.

Key Words: older adults; cancer; adverse effects; mental health; physical functioning

related symptoms have been associated with functional decline and subsequent increased use of hospital and emergency department services (Kurtz et al., 2006). For these reasons, understanding the symptom experience of older adults during treatment for cancer is important

Table 1. Sample Characteristics

Characteristic	Total (N = 100)		Breast (N = 18)		Lung (N = 21)		GI (N = 18)		Blood (N = 16)		HN (N = 16)		Other (N = 11)	
	X̄	SD	X̄	SD	X̄	SD	X̄	SD	X̄	SD	X̄	SD	X̄	SD
Age (years)	71.9	5.5	70.7	4.3	71.8	4.2	73.5	6.4	73.8	6.6	69.9	5.7	71.6	5.6

Characteristic	n	n	n	n	n	n	n
Gender							
Male	52	–	11	14	7	12	8
Female	48	18	10	4	9	4	3
Race or ethnicity							
African American	2	1	–	–	–	–	1
Asian	2	1	–	1	–	–	–
Caucasian	88	14	18	16	16	15	9
Hispanic or Latino	5	2	1	1	–	1	–
Native American	1	–	1	–	–	–	–
Did not answer	2	–	1	–	–	–	1
Language							
English	87	13	18	15	15	15	11
Other	13	5	3	3	1	1	–
Education level							
High school	34	7	6	5	7	6	3
Trade school	22	4	6	3	4	2	3
College or graduate school	38	7	7	7	5	8	4
Did not answer	6	–	2	3	–	–	1
Marital status							
Married or living with partner	72	14	15	14	10	11	8
Never married	8	2	1	1	1	2	1
Divorced or separated	6	2	2	–	1	1	–
Widowed	13	–	3	2	4	2	2
Did not answer	1	–	–	1	–	–	–
Employment							
Retired	94	16	19	18	16	14	11
Full-time	6	2	2	–	–	2	–
Income ($)							
Less than 50,000	23	7	5	3	4	2	2
50,000 or greater	15	4	3	1	1	3	3
Did not answer	62	7	13	14	11	11	6
Treatmentᵃ							
Biotherapy	23	6	2	1	11	1	2
Chemotherapy	99	17	21	18	16	16	11
Hormone therapy	6	6	–	–	–	–	–
Radiation therapy	42	9	6	8	2	14	3
Surgery	49	11	8	10	2	10	8
Number of treatment modalities*							
1	25	2	7	6	5	2	3
2	38	6	12	5	7	3	5
3	30	5	2	7	4	11	1
4	7	5	–	–	–	–	2
Treatment cycle							
2–5	53	8	12	8	9	12	4
6–9	19	4	4	2	3	2	4
10–14	9	3	–	4	1	–	1
Unknown	19	3	5	4	3	2	2
Had prior cancer							
Yes	46	9	7	6	9	10	5
No	50	9	13	12	6	5	5
Did not answer	4	–	1	–	1	1	1

*p = 0.001

ᵃ Patients could select more than one answer.

GI—gastrointestinal; HN—head and neck

to help them avoid negative effects and to self-manage symptoms at home.

Symptom experience remains poorly defined but consists of information related to symptom occurrence, severity, and distress. Studies examining older adults have reported conflicting or confusing results. Some studies have shown that older adults (aged 60 years or older) report lower symptom occurrence, severity, and distress than younger adults during active cancer treatment (Cataldo et al., 2013). This includes symptoms, such as pain, that many clinicians may associate with aging patients. Other studies have shown the occurrence rates and severity of symptoms, such as fatigue, pain, sleep difficulties, and memory problems, are relatively consistent across older age groups (aged 60 years and older). However, in one study, pain had the highest occurrence rate among patients aged 60–64 years, and fatigue is rated highest among patients aged 65 years or older (Ritchie et al., 2014). In another study, it was more common for patients aged 65 years or older not to report any occurrence of pain or fatigue during treatment; however, adults with more comorbidity reported higher levels of pain and fatigue severity (Soltow, Given, & Given, 2010).

The purpose of this study was to explore the symptom experience of older adults receiving cancer chemotherapy in an outpatient treatment setting. The aims of this study were to (a) examine the occurrence and severity of symptoms of older adults undergoing treatment for cancer, (b) explore differences in the symptom experience based on patient (e.g., age, gender, comorbidity, functioning) and treatment (e.g., diagnosis group) characteristics, (c) examine the relationship between experienced symptoms and patient characteristics, and (d) examine relationships among symptoms experienced.

Methods

This study was a descriptive, exploratory, cross-sectional study approved by the Orlando Health Institutional Review Board in Florida. Potential participants were identified through the hospital's electronic medical record system and approached about participating by a research nurse during an outpatient chemotherapy treatment visit. Eligible patients were men and women aged 65 years or older who were diagnosed with cancer, receiving treatment with chemotherapy, and able to speak and read English. After consent was obtained, participants were asked to complete three surveys. Data collection took about 20 minutes. Participants were thanked for their time with a $50 gift card to a local store.

Instruments

An investigator-developed demographics form was used to collect participant characteristics (i.e., age, gender, ethnicity, education level, marital status, employ-

ment, and income) and treatment characteristics (i.e., cancer type, treatment type and cycle, and history of prior cancer diagnoses). Comorbidity and functioning data were collected using items from the Older Americans Resources and Services (OARS) Multidimensional Functional Assessment Questionnaire. Comorbidity information was collected from the physical health subscale, which lists common illnesses and common medications. Participants indicated the presence of these illnesses and use of medications. A total score is calculated based on "yes" answers.

Mental health functioning was evaluated using the OARS survey, which includes the 15-item Short Psychiatric Evaluation Schedule (SPES). Scores were based on "yes" and "no" answers to questions designed to capture mental health problems in the elderly (e.g., depression, adjustment reactions, paranoia). Total scores could range from 0–15. Scores of 5 or higher indicate impaired or poor mental health functioning, and scores of 4 or lower indicate unimpaired mental health functioning.

Physical functioning was measured using two subscales: the seven-item instrumental activities of daily living (IADL) scale and the seven-item physical ADL (PADL) scale. Items were scored depending on whether tasks could be accomplished without help (2) or with some help (1), or if patients were unable to do a task (0). Higher scores indicated better functioning. All subscales within the OARS instrument demonstrated acceptable reliability (Cronbach alpha > 0.74) and validity in older populations (Duke Center for the Study of Aging and Human Development, 2014).

Symptom presence and severity was measured using the first part of the Symptom Representation Questionnaire, which lists 22 symptoms common to people with cancer. Participants were asked to circle the number that best described how they experienced that symptom in the past week. Symptom severity was rated on a Likert-type scale that ranged from 0 (did not have the symptom) to 10 (as bad as can be imagined). Additional space was present for individuals to write in other symptoms they had experienced and to indicate the severity. This tool has also demonstrated reliability (Cronbach alpha < 0.63) (Donovan, Ward, Sherwood, & Serlin, 2008).

Data Analysis

All data were examined using descriptive statistics (means, standard deviations, frequencies, and percentages). Chi-square analysis was used to examine demographic differences between diagnosis groups. Participant characteristics, including age, number of comorbid conditions, number of medications, and number of symptoms, were dichotomized using cut points that reflected the median score, making high and low categories for each group. Independent t tests were used to examine differences in symptom

Table 2. Mean Scores for Select Participant Characteristics

Characteristic	Total (N = 100) X̄	Total (N = 100) SD	Breast (N = 18) X̄	Breast (N = 18) SD	Lung (N = 21) X̄	Lung (N = 21) SD	GI (N = 18) X̄	GI (N = 18) SD	Blood (N = 16) X̄	Blood (N = 16) SD	HN (N = 16) X̄	HN (N = 16) SD	Other (N = 11) X̄	Other (N = 11) SD
Total number of symptoms	7.2	3.1	7.1	2.5	7.2	3.5	7.2	3.4	5.6	2.9	8.1	3.4	7.9	2.8
Total number of comorbid illnesses	2.7	1.3	2.6	1.2	2.7	1	2.7	1	2.9	1.5	2.6	1	3	2.2
Total number of medications taken	3	1.8	2.3	1.6	3.4	2.2	3.3	1.7	2.6	1.3	2.9	1.8	3.9	1.9
SPES (mental health)	3.3	2.5	2.8	2.6	3.3	2.5	3.2	2.4	3.1	2.5	3	2.3	5.4	2.2
IADL[a]	11.1	2.9	12	2.4	11.1	3.1	10	2.5	12	3	12.1	2.2	8.9	3.6
PADL	13.1	2.2	13.3	1.5	13.2	2.5	13.6	1.3	13	2.4	13.4	2	11.6	3.3

[a] $p \leq 0.014$ in two-tailed tests

GI—gastrointestinal; HN—head and neck; IADL—instrumental activities of daily living; PADL—physical activities of daily living; SPES—Short Psychiatric Evaluation Schedule

Note. All group comparisons used analysis of variance tests.

Note. Higher scores on SPES indicate poorer mental functioning, and higher scores on IADL and PADL indicate better instrumental and physical functioning.

occurrence based on different patient characteristics (age, gender, comorbidity, functioning). Analysis of variance (ANOVA) was used to examine and compare the symptom experience by diagnosis group. Pearson correlations were used to examine the relationship between symptoms and patient characteristics, and relationships between symptoms.

Results

Participant Characteristics

One hundred older adults participated in the study. One hundred and fifteen older adults were approached, but 15 declined. The mean age of participants was 71.9 years. Men (n = 52) and women (n = 48) participated about equally (see Table 1). Most participants were Caucasian, spoke English as their primary language, were married, and were retired. Fifty participants had a prior cancer diagnosis, with 38 of those reporting having a recurrence of that same cancer. No significant differences were found among diagnosis groups (i.e., breast, head and neck, gastrointestinal, blood, lung, and other cancers) except for gender ($\chi^2[5] = 30.01$, p < 0.01) and number of treatment modalities ($\chi^2[5] = 39.49$, p = 0.001).

Almost all (n = 98) participants reported at least one comorbid illness, with a mean of 2.71 illnesses (SD = 1.25). Thirty-nine participants reported one or two illnesses, and 59 reported three or more illnesses. High blood pressure was the most prevalent (n = 66), followed by other problems with the heart (n = 21), thy-

roid or glandular disorders (n = 19), diabetes (n = 18), arthritis (n = 13), ulcers (n = 13), and emphysema (n = 12). Participants also reported taking an average of 3.04 medications (SD = 1.8). Number of comorbid conditions and number of medications did not differ significantly between diagnosis groups (p > 0.132).

Sixty-two participants in the sample had good or unimpaired mental health functioning, with SPES scores below 4, and 38 had scores indicative of impaired mental health (scores of 5 or higher). The mean SPES score was 3.34 (SD = 2.48, range 0–8). Those in the other cancers diagnosis group reported the worst mental health functioning, with a mean score of 5.36. The breast cancer diagnosis group reported the highest mental health functioning, with a mean score of 2.83. However, the scores did not significantly differ between groups.

Physical functioning for the sample was relatively high. The mean IADL score was 11.12 (SD = 2.91), and the mean PADL score was 13.08 (SD = 2.2). Participants in the other diagnosis group reported the poorest function for IADL and PADLs. Those with head and neck cancer reported the highest IADL functioning, and those with gastrointestinal cancers reported the highest PADL scores. Only the IADL scores were significantly different between groups (F(1,94) = 3.045, p = 0.014, η^2 = 0.139) (see Table 2).

Symptom Experience

Participants reported experiencing 2–16 symptoms, with an average of 7.15 symptoms at the time of participation. Using ANOVA, no significant difference

was found in total number of symptoms based on the cancer diagnoses (p = 0.306). Fatigue was the most commonly reported symptom (n = 94). Other symptoms included bowel disturbances, lack of appetite, hair loss, drowsiness, and memory problems. More common write-in symptoms included taste changes, skin rash and redness, problems swallowing, problems with balance, itching, extremity swelling, dry mouth, esophagitis, anxiety, nail changes, hiccoughs, and mucositis. The following symptoms were written into the survey once: breathing difficulty while sleeping, acid reflux, body aches, flu-like symptoms, hearing loss, vision problems, and hoarseness.

Within diagnosis groups, fatigue was the most common and most severe symptom for all groups. However, within each group, the top symptoms and subsequent severity scores varied. Although the top three symptoms were slightly different within each group, no statistically significant differences were found between symptom severity scores between groups except for hair loss, shortness of breath, and swallowing problems (p < 0.05). Hair loss was reported as more severe in the breast cancer group and least severe in the other cancers group (see Table 3). Shortness of breath was reported as more severe in the lung cancer group and least severe in the gastrointestinal group. Swallowing problems were noted only within the head and neck and breast cancer groups. These severity scores were based on the entire diagnosis group, whether they experienced the symptom or not.

For those who reported symptoms, symptom severity scores were reported as moderate (scores of 4–6) to severe (scores of 7–10). Numbness and tingling was the most severe symptom, with a mean severity rating of 7.03. Symptoms with moderate severity included fatigue, taste changes, pain, lack of appetite, sleep disturbances, and bowel disturbances. Table 4 presents a summary of the most common symptoms reported and the severity rating based on those who reported having each symptom (rated 1–10) to demonstrate the seriousness of the symptom experienced by older adults.

Group Differences Related to Symptoms

T tests were used to compare symptom experience between several groups, including age (ages 65–70 years versus ages 71 years and older), number of comorbidities (0–2 versus 3–6), and mental health function (mean score of 4 or less versus mean score of 5 or greater). Adults

Table 3. Top Symptoms and Mean Severity Score by Diagnosis Using Means From Whole Sample

Symptom	Breast (N = 18) $\overline{X}$	SD	Lung (N = 21) $\overline{X}$	SD	GI (N = 18) $\overline{X}$	SD	Blood (N = 16) $\overline{X}$	SD	HN (N = 16) $\overline{X}$	SD	Other (N = 11) $\overline{X}$	SD
Bowel disturbances	2.6	2.9	3.2	3.4	3.9	3.2	2.1	2.5	1.8	2.6	1.5	2.6
Depression	0.4	1	0.6	1.6	1	2.4	0.9	1.1	0.2	0.5	0.9	1.1
Drowsiness	2	2.6	1.4	1.8	0.9	1.4	1	1.7	0.8	1.2	1.7	2.3
Fatigue	5.6	3	5.8	3.1	6.2	2.8	5.8	2.6	5.6	2.3	6.6	2.3
Hair loss*	3.6	2.1	2.2	2.4	1	1.9	1.1	2.5	1.7	2.1	0.6	1.1
Lack of appetite	2.5	3.4	2.7	3.3	2.1	2.6	2.1	3	3.4	2.8	4	3.9
Memory problems	0.7	1.4	1.9	2.8	1.9	2	1.5	2.3	1	1.2	2.9	3
Numbness or tingling	2.1	3.3	1.1	1.9	3.2	3.5	1.5	3	4.7	14.1	1.6	3
Pain	0.7	1.9	1.4	2.7	0.8	2.1	0.9	2.5	2.2	3.1	2.7	3.4
Shortness of breath**	1.2	2.3	2.2	3.4	0.1	0.2	0.2	0.8	0.7	1.9	0.8	2.7
Sleep disturbances	2.2	3.2	2.1	2.8	1.3	2.5	1.1	1.9	2	2.8	1.8	3.2
Swallowing problems***	0.4	1.7	–	–	–	–	–	–	2	3.6	–	–
Taste changes	2.9	2.7	2.1	3.5	1.2	2.3	1.4	2.8	2.7	3.8	0.6	1.8
Weight loss	1.5	2.1	1.5	2.7	1.7	2.7	1.4	2.6	3.1	3.2	1.9	2.9

*p = 0.002; **p = 0.043; ***p = 0.003
GI—gastrointestinal; HN—head and neck
Note. All between-group comparisons used analysis of variance tests.

Table 4. Occurrence Rate and Symptom Severity Score of Participants Who Reported Each Symptom (N = 100)

Symptom	Number of Incidences	Severity Score	
		$\overline{X}$	SD
Fatigue	94	6.2	2.4
Bowel disturbances	57	4.6	2.5
Lack of appetite	54	5	2.6
Hair loss	51	3.5	2.1
Drowsiness	48	2.7	1.9
Memory problems	46	2.4	2.1
Sleep disturbance	36	4.9	2.1
Numbness and tingling	33	7	8.9
Taste changes	31	6.2	2.5
Pain	25	5.4	2.4
Abdominal bloating	21	1.7	1.2
Dizziness	21	2.9	2.1
Mood swings	18	3.3	2.4
Depression	18	3	2.2
Nausea	17	4.9	2.7
Hot flashes	15	5.4	1.7
Urinary problems	11	5.7	1.7
Headaches	7	4.6	2.9
Weight gain	6	2.8	2.7
Sexuality concerns	3	2.7	2
Vomiting	1	5	–

Note. Severity ranges from 0–10, with higher scores indicating a more severe problem.

aged 71 years or older reported more symptoms compared to adults aged 65–70 years. Adults with a prior diagnosis of cancer also reported a higher number of symptoms compared to those without a prior cancer history. However, neither of these differences were significant. Adults with a higher number of comorbid conditions (3–6) reported significantly more symptoms ($\overline{X}$ = 7.75) compared to those with 0–2 comorbid conditions ($\overline{X}$ = 6.29, t[98] = –2.335, p = 0.022). In addition, those with poorer mental health function reported significantly more symptoms ($\overline{X}$ = 9.16) compared to those with unimpaired mental health functioning ($\overline{X}$ = 5.92, t[98] = –5.793, p = 0.00).

Relationships Between Symptoms and Participant Characteristics

The strongest relationships (r = 0.139, n = 100, p < 0.001) were between mental health function (SPES scores) and IADLs (see Table 5). A strong relationship was also found between IADLs and PADLs (r = –0.232, n = 100, p = 0.00). Significant but moderate relationships were found between age and IADLs; mental health function and number of symptoms and PADLs; number of prescription medications taken and total number of comorbid illness, number of symptoms, IADLs, and PADLs; and number of comorbid conditions and IADLs and PADLs.

Relationships Between Symptoms

Several significant but moderate relationships exist between the most common symptoms reported by the total group (see Table 6). The strongest relationship was between fatigue and lack of appetite and between fatigue and memory problems. Relationships were also found between drowsiness and fatigue and between lack of appetite and memory problems.

Discussion

Knowledge about the symptom experience of older adults during treatment for cancer may improve outcomes because some evidence exists that older adults minimize their symptom experience (Loerzel & Aroian, 2012, 2013). This study shows that older adults experience a significant number of symptoms while receiving treatment, many of which were rated to have moderate severity. The average number of symptoms experienced by participants in this study was 7.15, which is similar to symptom occurrence reported in other studies (Kurtz et al., 2006). Comorbidities were also noted in this sample, with the majority reporting three or more conditions. This is slightly higher than other studies that include younger participants, which report a lower percentage (36%) of participants having three or more comorbidities (Soltow et al., 2010). In this study, participants with a higher number of comorbidities (3–6) reported significantly more symptoms. The correlation between symptoms and comorbidities has been noted in post-treatment survivor literature (Beck, Towsley, Caserta, Lindau, & Dudley, 2009; Bellury et al., 2012). However, the impact of prior comorbidity on the symptom experience is unclear. Studies have shown that the presence of comorbidities is often a concern when planning treatment for older adults because of the possibility of negative effects (Given & Given, 2009), and comorbidities combined with other aging factors have led to withholding treatment (Hoeben et al., 2013). Other studies have reported no difference in treatment complications or outcomes because of comorbidities (Peters et al., 2011).

Negative effects are not known to be caused by the comorbidity itself or by older adults' lack of knowledge about how to manage preexisting symptoms or new treatment-related symptoms. Literature suggests that older adults with cancer minimize symptoms and may not manage symptoms well (Loerzel & Aroian, 2012, 2013). Researchers do not know whether preexisting symptoms related to the comorbidity mask the onset of new treatment-related symptoms during treatment or if symptoms related to comorbidity are gradually made worse during cancer treatment and go unrecognized. Both of these occurrences could lead to lack of an appropriate response. More research is needed to evaluate

Table 5. Relationships Between Symptoms and Participant Characteristics (N = 100)

Variable	SPES	Rx	Comorbidities	Symptoms	IADL	PADL
Age (years)	0.139	–0.012	0.068	0.009	–0.233*	–0.163
SPES	–	0.187	0.155	0.484**	–0.642**	–0.464**
Rx	–	–	0.495**	0.334**	–0.238*	–0.167
Comorbidities	–	–	–	0.156	–0.2*	–0.247*
Symptoms	–	–	–	–	–0.336**	–0.309**
IADL	–	–	–	–	–	0.64**

*$p < 0.05$ in two-sided test for zero correlation; **$p < 0.002$ in two-sided test for zero correlation
IADL—instrumental activities of daily living; PADL—physical activities of daily living; Rx—prescription; SPES—Short Psychiatric Evaluation Schedule

the impact of comorbidity on symptom experience and outcomes.

Although the majority of older adults presented with unimpaired mental health functioning, 38 participants had impaired mental health functioning according to the SPES survey, which is high, considering that mental health symptoms, such as depression, anxiety, and mood swings, were seldom reported by this sample. Other studies have also reported low incidence of mental or emotional symptoms and positive mental health in older age groups (Ritchie et al., 2014). Studies with post-treatment survivors have reported a low incidence of depression in older adults (Beck et al., 2009) and high mental health scores in breast cancer survivors (Bellury et al., 2012). One explanation for the high percentage of participants with impaired mental health functioning is that the SPES contains items reflective of mental health issues specific to aging (e.g., depression, adjustment reactions, paranoia), so this study may have captured mental health concerns not reported in other studies. Regardless, more research is needed pertaining to older adults' mental health functioning during cancer treatment.

Physical functioning was high in this sample, with IADL scores slightly lower than PADL scores. This is an interesting finding and may be because of high fatigue levels. Low IADL functioning could also be reported because items on the IADL included tasks of daily living, such as doing housework, cooking, and grocery shopping, that some participants could have indicated that they need help with because the task was not something they usually performed before treatment, or it could indicate the adult taking on the role of patient and stopping activities by choice. Participants in the other cancers diagnosis group scored lower than the other groups on IADL and PADL,

which could be because the category included diagnoses (melanoma, brain, ovarian, uterine, bladder, and sarcoma cancers) with harsher treatment regimens or older adults who were diagnosed at an advanced stage compared to the other diagnosis groups, leading to more symptom-related functional losses.

Fatigue was the most frequently reported symptom in this study, which is consistent with other studies (Ritchie et al., 2014). Pain was experienced by 25 participants in this study. That number is low compared to other studies that have reported pain in as many as 66% of the sample (Ritchie et al., 2014). Although the authors do not know why this sample did not report a higher incidence of pain, prior studies indicate that pain is reported less in older samples compared to younger samples (Cataldo et al., 2013). The authors speculate that this sample may not have had treatment for cancer-related pain or did not feel the need to report pain from preexisting noncancerous conditions, such as arthritis. Older adults also may have developed a higher pain tolerance over time, leading them to report symptoms that were newer, more serious, or more specifically related to the cancer treatment.

Of note, more than half of participants reported gastrointestinal symptoms (e.g., bowel disturbances, lack of appetite), but participants reported a low incidence of nausea (n = 17), and vomiting was a problem for only one participant in the sample. In studies that have examined treatment toxicity, nausea was reported in as many as 60% of those receiving chemotherapy for lung cancer (Hardy et al., 2010) and is listed as the top gastrointestinal toxicity in patients with lung and breast cancers during treatment (Lamont et al., 2008). The low report of nausea and vomiting in this sample may be because of adequate treatment with antiemetics,

Table 6. Correlations Between Top Symptoms

Variable	N	Drowsiness	Fatigue	Hair Loss	Lack of Appetite	Memory Problems
Bowel disturbances	99	0.143	0.18	0.141	0.048	0.056
Drowsiness	100	–	0.236*	–0.002	0.042	0.088
Fatigue	99	–	–	–0.142	0.339**	0.268**
Hair loss	99	–	–	–	–0.154	–0.137
Lack of appetite	99	–	–	–	–	0.231*

*$p < 0.05$ in two-sided test for zero correlation, **$p < 0.01$ in two-sided test for zero correlation

low-emetic chemotherapy regimens, dose reduction of standard chemotherapy, or participants completing the survey early in the treatment trajectory before nausea became a significant issue. Taste changes were also reported by 31 participants in this sample and were the number one write-in symptom. This is a concerning issue for older adults receiving cancer treatment because evidence exists that age-related alterations in appetite, such as lack of appetite, may lead to malnutrition and cachexia in this population (Hardy et al., 1986). The unique opportunity to write in additional symptoms on the symptom report form may have highlighted this issue.

When experienced, all of the gastrointestinal symptoms, including nausea, were reported as having moderate severity (mean scores of 4.6–6.9), which makes gastrointestinal symptoms a high priority for assessment and management in older populations because those symptoms may lead to poor nutrition and fluid intake and, ultimately, dehydration (Naeim, Aapro, Subbarao, & Balducci, 2014). Dehydration is a major reason for unplanned hospital admission during treatment (Weaver et al., 2006).

The symptoms reported within each diagnosis group were relatively consistent. Hair loss was the second most bothersome symptom for breast cancer survivors, which may be because of only females participating in this subgroup. The gastrointestinal cancer and head and neck cancer groups reported numbness and tingling as one of the most bothersome treatment-related symptoms. This may be because of the nature of the chemotherapy (e.g., oxaliplatin, cisplatin) received as part of their treatment plan. Swallowing problems were unique to the head and neck cancer and the breast cancer groups. Swallowing problems in the head and neck cancer group are likely because of surgery; why the breast cancer group also experienced this is unclear.

Most relationships between key variables were expected. Mental health functioning was positively related to number of symptoms and inversely related to IADL and PADL functioning. This relationship has also been noted in breast cancer survivors (Bellury et al., 2012; Van Cleave, Egleston, & McCorkle, 2011). Some studies have reported a relationship between cognitive function and depression and functional disability (Morala-Dimaandal, 2009); however, cognitive functioning (e.g., memory problems) and depression were infrequently reported by the current sample. Age and number of symptoms were also inversely related to IADL and PADL scores. Comorbidity was also inversely related to IADL scores. This may reflect a natural process because the number of comorbidities increases and function declines in many aging adults (Colón-Emeric, Whitson, Pavon, & Hoenig, 2013). Older age, more symptoms, and the higher number of comor-

Knowledge Translation

Adults aged 65 years or older undergoing treatment for cancer experience numerous side effects, many with moderate to severe intensity.

Older adults with comorbidities and poor mental functioning may experience a higher number of treatment-related symptoms.

Gastrointestinal symptoms appear to be common in older adults during treatment for cancer.

bidities all led to lower ability to complete everyday tasks, such as shopping, cooking, and cleaning.

The relationship between symptoms experienced by older adults during treatment needs more exploration. This sample was too small to determine symptom clusters; however, relationships that were not appreciated before in the literature are noted. In this sample of older adults during treatment, fatigue was related to drowsiness, lack of appetite, and memory problems. Lack of appetite was related to memory problems. Prior literature with post-treatment survivors has focused on relationships between fatigue, pain, depression, and insomnia (Bellury et al., 2012; Soltow et al., 2010). These relationships could not be confirmed in the current study because of the low number of participants who reported pain, depression, and sleep problems. The symptom experience may be different between older survivors and older adults during treatment. Older adults during treatment may experience or report more symptoms directly related to chemotherapy treatment, such as bowel disturbance and lack of appetite, compared to survivors who likely are not experiencing those symptoms once treatment is completed.

Limitations

This study had several limitations, including lack of ethnic diversity and a small sample size. This sample was mainly Caucasian; however, gender diversity and a variety of diagnoses were included. This variety adds to the generalizability of this study because the symptom experience was similar across the entire sample. Another limitation was the cross-sectional design. A longitudinal study could have examined changes in the symptom experience over time, improving knowledge of the natural progression of symptoms in this population.

Implications for Research and Practice

Few studies specifically focus on the symptom experience of older adults during treatment for cancer.

Consequently, healthcare professionals may not be sensitive to the specific experience of older patients. Several areas are suggested for future research, including using larger and more ethnically diverse samples to examine symptom clusters and relationships between symptoms, the impact of mental health functioning on the symptom experience, symptom distress, and the extent of gastrointestinal symptoms in this population. Other studies may also benefit from further breaking down age groups to examine differences in patients in different, specific age groups (aged 60–64 years, 65–70 years, or 71 years and older). More research is needed if healthcare professionals are expected to prepare plans of care for this quickly growing population. Longitudinal studies are also needed to examine symptoms into post-treatment survivorship. Future research should include examining how older people self-manage symptoms at home.

In practice, healthcare professionals need to consider differences among individuals that may increase the risk of experiencing more symptoms. Older age (aged 71 years and older), prior cancer diagnosis, presence of comorbidities, and poor mental health function may all increase risk for symptoms. Mental health should be assessed prior to treatment and periodically during treatment to identify problems (e.g., depression, adjustment reactions) in older adults that could affect the symptom experience. Referrals to mental health counselors should be made when problems are identified to improve outcomes.

Symptom presence and severity also need to be assessed in individuals on an ongoing basis. Common symptoms, such as fatigue and gastrointestinal issues, were identified and should remain a priority. Symptoms can negatively affect quality of life, and gastrointestinal symptoms can lead to more serious symptoms, such as dehydration and a higher use of resources. This study identified 19 write-in symptoms related to cancer treatment that were experienced by five or fewer patients. Nurses should be prepared to assess for a variety of symptoms, including symptoms (e.g., taste changes, dry mouth, balance) that may be uncommon or not routinely reported by patients to help older adults self-manage these symptoms.

Conclusions

This study adds to a small but growing body of literature related to the symptom experience of older adults during treatment for cancer. This study indicates that the symptom experience is largely consistent among older adults during treatment for cancer; however, some differences unique to each diagnosis group exist. Comorbidity, as well as mental and physical functioning, also affect the symptom experience. Opportunities exist for clinicians and researchers to expand on this research and take steps to assess and manage symptoms common to older adults before serious complications and negative outcomes occur.

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