Older Cancer Survivors Have a Lower Symptom Burden

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Conflict of Interest

The authors have no conflicts of interest to report.
Background

- Over 16.9 million cancer survivors are living in the United States in 2019
- Represents 5.0% of the population
- 21.7 million survivors by 2029
- 26.1 million survivors by 2040
- 64% of survivors are over 65 years of age
- 73% of cancer survivors will be over 65 years of age in 2040
Age Distribution of Cancer Survivors


Estimated Number of Cancer Survivors in the U.S., by Current Age

- 65+ years: 62%
- 40-64 years: 33%
- 0-19 years: 1%
- 20-39 years: 4%

Estimated Number of Cancer Survivors in the U.S., by Current Age – More Detail

- 50-59 years: 15%
- 60-69 years: 27%
- 70-79 years: 26%
- 80+ years: 21%
- 40-49 years: 6%
- 30-39 years: 3%
- 20-29 years: 1%
- 0-19 years: 1%
Symptom Burden in Cancer Survivors

• Clinical experience suggests that cancer survivors experience multiple co-occurring symptoms
• Epidemiologic studies are lacking for individual symptoms and multiple co-occurring symptoms
• Majority of the studies done in survivors with breast cancer
• Variability in occurrence estimates
  • Variability in the number of symptoms assessed
  • Variability in the timing of the assessments
• No data on age differences in symptom severity scores
Purpose of Study

• Evaluate for differences in the severity of seven common symptoms between younger (<65 years) and older (>65 years) cancer survivors

• Seven symptoms
  • Trait anxiety
  • State anxiety
  • Depression
  • Fatigue
  • Sleep disturbance
  • Attentional function
  • Pain
Design and Methods

• Cross-sectional study
• Parent study designed to evaluate survivors with and without CIPN
• Patients were recruited from throughout the San Francisco Bay area
• Inclusion criteria:
  • 18 years of age or older
  • Had received a platinum +/- taxane compound
  • Had complete the course of chemotherapy
  • Were able to read, write, and understand English
Study Procedures

- Written informed consent was obtained from all patients
- Patients were sent self-report questionnaires to complete in their home one week prior to the study visit
- Patients were seen in the Clinical Research Center at UCSF
  - Booklets were checked for completeness
  - Medical records were reviewed for disease and treatment information
Instruments

• Demographic questionnaire
• Karnofsky Performance Status scale
• Self Administered Co-morbidity Questionnaire
• Spielberger State Anxiety Inventory
• Center for Epidemiological Studies-Depression Scale
• General Sleep Disturbance Scale
• Lee Fatigue Scale
• Attentional Function Index
• Brief Pain Inventory
Data Analysis

• Descriptive statistics were generated on patients’ demographic and clinical characteristics
• Differences in demographic and clinical characteristics and symptom severity scores were evaluated using:
  • Independent sample t-tests
  • Fisher’s exact tests
  • Mann Whitney U tests
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Younger 63.1% (n=393)</th>
<th>Older 36.9% (n=230)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (mean, SD)</td>
<td>16.3 (2.7)</td>
<td>16.6 (2.8)</td>
<td>.171</td>
</tr>
<tr>
<td></td>
<td>% (n)</td>
<td>% (n)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>87.0 (341)</td>
<td>80.9 (186)</td>
<td>.049</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>73.8 (290)</td>
<td>87.4 (201)</td>
<td>.001</td>
</tr>
<tr>
<td>Non-white</td>
<td>26.2 (103)</td>
<td>12.6 (29)</td>
<td></td>
</tr>
<tr>
<td>Married/partnered (% yes)</td>
<td>62.7 (239)</td>
<td>59.7 (135)</td>
<td>.490</td>
</tr>
<tr>
<td>Lives alone (% yes)</td>
<td>25.2 (97)</td>
<td>34.6 (79)</td>
<td>.016</td>
</tr>
<tr>
<td>Working for pay (% yes)</td>
<td>56.2 (221)</td>
<td>24.0 (55)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Income &gt;$100,000 per year</td>
<td>44.7 (165)</td>
<td>34.9 (73)</td>
<td>.027</td>
</tr>
<tr>
<td>Child care responsibilities (% yes)</td>
<td>21.5 (84)</td>
<td>4.0 (9)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Exercise on a regular basis</td>
<td>86.7 (339)</td>
<td>85.6 (196)</td>
<td>.718</td>
</tr>
</tbody>
</table>
Differences in Clinical Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Younger</th>
<th>Older</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>63.1% (n=393)</td>
<td>36.9% (n=230)</td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Karnofsky Performance Status score</td>
<td>84.8 (10.7)</td>
<td>87.4 (10.1)</td>
<td>.002</td>
</tr>
<tr>
<td>Number of comorbid conditions</td>
<td>1.7 (1.4)</td>
<td>2.1 (1.5)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Self-Administered Comorbidity Questionnaire</td>
<td>3.5 (3.3)</td>
<td>4.2 (3.3)</td>
<td>.019</td>
</tr>
<tr>
<td>Years since cancer diagnosis</td>
<td>4.2 (4.6)</td>
<td>5.5 (5.1)</td>
<td>.003</td>
</tr>
<tr>
<td>Number of prior cancer treatments</td>
<td>3.3 (1.0)</td>
<td>3.0 (0.9)</td>
<td>.002</td>
</tr>
<tr>
<td>Number of current cancer treatments</td>
<td>0.5 (0.6)</td>
<td>0.3 (0.5)</td>
<td>.002</td>
</tr>
<tr>
<td>Number of metastatic sites</td>
<td>0.7 (0.7)</td>
<td>0.9 (0.9)</td>
<td>.010</td>
</tr>
<tr>
<td>Cancer diagnosis (% (n))</td>
<td></td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Breast</td>
<td>62.3 (245)</td>
<td>44.3 (102)</td>
<td></td>
</tr>
<tr>
<td>Colon</td>
<td>6.4 (25)</td>
<td>10.9 (25)</td>
<td></td>
</tr>
<tr>
<td>Lung</td>
<td>2.3 (9)</td>
<td>4.3 (10)</td>
<td></td>
</tr>
<tr>
<td>Ovarian</td>
<td>8.4 (33)</td>
<td>9.1 (21)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>20.6 (81)</td>
<td>31.3 (72)</td>
<td></td>
</tr>
</tbody>
</table>
## Differences in Symptom Severity Scores

<table>
<thead>
<tr>
<th>Symptom (clinically meaningful cutoff score)</th>
<th>Younger 63.1% (n=393) Mean (SD)</th>
<th>Older 36.9% (n=230) Mean (SD)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trait anxiety (&gt;31.8)</td>
<td>36.0 (9.9)</td>
<td>32.6 (8.6)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>State anxiety (&gt;32.2)</td>
<td>32.9 (11.1)</td>
<td>30.1 (10.3)</td>
<td>.002</td>
</tr>
<tr>
<td>Depression (&gt;16.0)</td>
<td>10.8 (9.2)</td>
<td>7.7 (7.8)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Morning fatigue (&gt;3.2)</td>
<td>3.4 (2.2)</td>
<td>2.2 (1.9)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Evening fatigue (&gt;5.6)</td>
<td>5.7 (1.9)</td>
<td>4.8 (2.0)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Sleep disturbance (&gt;43.0)</td>
<td>47.1 (20.2)</td>
<td>42.2 (20.7)</td>
<td>.004</td>
</tr>
<tr>
<td>Attentional function (&lt;5.0 is low function, 5.0 to 7.5 is moderate function, &gt;7.5 is high function)</td>
<td>6.6 (1.7)</td>
<td>7.4 (1.5)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Pain not related to cancer or its treatment (% yes (n))</td>
<td>53.5 (209)</td>
<td>60.5 (138)</td>
<td>.094</td>
</tr>
<tr>
<td>Causes of non-cancer pain (% yes (n))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td>24.4 (51)</td>
<td>16.7 (23)</td>
<td>.108</td>
</tr>
<tr>
<td>Low back pain</td>
<td>45.0 (94)</td>
<td>46.4 (64)</td>
<td>.826</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>3.8 (8)</td>
<td>0.0 (0)</td>
<td>.024</td>
</tr>
<tr>
<td>Diabetic neuropathy</td>
<td>1.4 (3)</td>
<td>2.9 (4)</td>
<td>.443</td>
</tr>
<tr>
<td>Arthritis</td>
<td>24.4 (51)</td>
<td>65.2 (90)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
Conclusions

- Findings are consistent with a previous report of patients undergoing active cancer treatment\(^1\).
- Despite having a higher level of comorbidity, older patients report a significantly lower symptom burden.
- Plausible hypotheses:
  - Age related changes in the hypothalamic-pituitary-adrenal axis.
  - Older patients may experience a “response shift” – psychological shift that represents a change in a person’s internal framework for the assessment of experiences.
  - Older adults may under-report symptoms.

\(^1\) Cataldo et al., BMC Cancer 13:6, 2013
Limitations

- Cross-sectional study with a convenience sample
- Parent study designed to evaluate for differences in demographic and clinical characteristics and QOL outcomes in survivors with and without CIPN
- Older adults with a higher symptom burden may not have enrolled in the study
- Demographic and clinical characteristics of the sample may limit the generalizability of the study findings
  - Primarily women with breast cancer
  - Caucasian
  - Well-educated
Implications for Practice

- Regardless of age, cancer survivors warrant evaluation of common symptoms including:
  - Anxiety
  - Depression
  - Fatigue
  - Sleep disturbance
  - Attentional function
  - Pain
- The majority of these symptoms were above the clinically meaningful cutoff scores
Implications for Research

• Longitudinal studies are needed to evaluate for changes over time in the symptom experience of cancer survivors
• Differences in the symptom experience of older age groups warrant consideration
  • 60 to 64 years
  • 65 to 69 years
  • 70 to 74 years
  • >75 years
• Mechanisms that underlie age differences in survivors symptom experiences warrant investigation
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  Judy Mastick         Alan Venook
  Michelle Melisko     Jon Levine
  Margaret Chesney     Lee-May Chen
  Kimberly Topp        Thierry Jahan