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The Association Between Self-Reported Cognitive Abilities and Commonly Reported Symptoms in Long-Term Breast Cancer Survivors

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Background: Breast cancer is the most commonly diagnosed cancer among women. Survival rates for breast cancer have steadily risen over the past decade resulting in 90% of women surviving breast cancer at 5 years in the United States (US). There are approximately 3.5 million breast cancer survivors (BCS) living in the US. However, women can be left facing detrimental symptoms long into survivorship. We are interested in better understanding those commonly reported cancer symptoms.

Purpose: The purpose of this secondary data analysis is to examine the association between self-reported cognitive ability and commonly reported cancer symptoms of anxiety, depressive symptoms, and fatigue in BCS. Specifically, we will address multiple self-reported cognitive domains using the Multiple Ability Self-Report Questionnaire (MASQ) and examine the associations between the different domains (language, visuo-perceptual, verbal memory, visual memory, and attention) and commonly reported cancer symptoms (anxiety, depressive symptoms, fatigue), while controlling for age and education.

Methods: This is a secondary data analysis from pooled baseline data from 2 independent IRB-approved studies of BCS with the same inclusion criteria. Study I had 88 BCS and study II had 68 BCS resulting in 156 BCS. Eligibility criteria for this study included: 1) prior breast cancer diagnosis, 2) at least one year post initial treatment (except for tamoxifen or aromatase inhibitors), 3) 21 years of age or older, 4) stage I to III, and 5) reporting some level of cognitive concerns. 144 BCS had complete data which was then used in our analysis. Cognitive ability was measured using the Multiple Ability Self-Report Questionnaire (MASQ). Commonly reported cancer symptoms of anxiety, depressive symptoms, and fatigue were measured using the Spielberger State Trait Anxiety Inventory - State (STAI-S), Centers for Epidemiologic Studies Depression Scale (CES-D), and Functional Assessment of Cancer Therapy – Fatigue (FACT-F), respectively.

Data was analyzed using descriptive statistics and linear regression to address the aims of this study. Linear models and change point models were used to assess the associations of cognitive abilities and common symptoms (anxiety, depressive symptoms, fatigue), adjusting for age and education level.

Results: BCS included in this study were on average 54.4 (SD 8.8) years of age. The majority of the BCS were white (97.2%), married (66%), and working full-time (59.7%). In addition, these were long-term BCS, who were on average over 5 years post-treatment (5.1 years; SD 3.6) and well educated (some college - 15.6 years; SD 2.2). Anxiety was significantly related to cognitive abilities, with increased anxiety associated with poorer cognitive abilities ($p=0.0105$ - <0.0001), except for visual memory, which, was noted to have an inflection point at which the slope changed and flattened at an anxiety score of 35. Depressive symptoms were significantly related to cognitive ability, with higher levels of depressive symptoms in general associated with poorer cognitive abilities ($p=0.045$ - <0.0001). Regression models for depressive symptoms and cognitive ability showed a different slope on either side of depressive symptoms scores of 10 for visuo-perception, verbal memory, attention and total score. This indicating that values of 10 or less on the CES-D had a different slope than those scores equal to or below 10. Fatigue was significantly correlated with cognitive ability, with increased levels of fatigue associated with poorer cognitive abilities ($p<0.0001$). Age and time since treatment were not correlated with any of the cognitive ability outcomes. Highest education level showed statistically significant negative correlations with cognitive ability, but the strength of the correlations was weak ($p=0.0377$ - <0.0008).

Conclusions: Commonly reported cancer symptoms of anxiety, depressive symptoms, and fatigue were significantly related to cognitive abilities (language, visuo-perceptual, verbal memory, visual memory, and attention). In general, increased levels of anxiety, depressive symptoms, and fatigue were associated with decrements in cognitive abilities. Our data identified a score of 35 on the STAI-S as a potential cut point in the relationship between anxiety and visual memory. In addition, depressive symptoms scores of 10 or more on the CES-D were identified as a potential cut point in the relationship between depressive symptoms and cognitive abilities (verbal memory, visual memory, visual perception, attention and total score). If validated further these potential cut points could be used to screen BCS who may be more likely to have poorer cognitive abilities. Results from his study can inform future BCS survivorship care planning and future research. In addition, findings from this study will benefit nurses and other individuals working to improve symptom management and survivorship of longer-term BCS.

Title:

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Keywords:

breast cancer survivors, cognitive abilities and symptoms

References:

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Abstract Summary:

The target audience of this presentation is nurses who care for breast cancer patients and survivors and want better understanding of the relationship between self-reported cognitive abilities (language, visuo-perceptual, verbal memory, visual memory, and attention) and anxiety, depressive symptoms, and/or fatigue in breast cancer survivors.

Content Outline:

Introduction

1. Breast cancer is the most commonly diagnosed cancer among women.
2. Survival rates for breast cancer have risen in the United States; however, women can be left facing detrimental symptoms long into survivorship.

Body

Purpose: The purpose of this study is to examine the association between self-reported cognitive ability and commonly reported cancer symptoms of anxiety, depressive symptoms, and fatigue in breast cancer survivors (BCS).

Methods:

1. This is a secondary data analysis from pooled baseline data from 2 independent IRB-approved studies. Study I had 88 BCS and study II had 68 BCS resulting in 156 BCS; 144 BCS had complete data which was then used in our analysis.
2. Data was analyzed using descriptive statistics and linear regression to address the aims of this study.

Results:

1. Anxiety was significantly related to cognitive abilities, with increased anxiety associated with poorer cognitive abilities.
2. Depressive symptoms were significantly related to cognitive ability, with higher levels of depressive symptoms in general associated with poorer cognitive abilities.
3. Fatigue was significantly correlated with cognitive ability, with increased levels of fatigue associated with poorer cognitive abilities.

Conclusion

1. Commonly reported cancer symptoms of anxiety, depressive symptoms, and fatigue were significantly related to cognitive abilities (language, visuo-perceptual, verbal memory, visual memory, and attention).
2. Results from this study can inform future BCS survivorship care planning and future research.
3. Findings from this study will benefit nurses and other individuals working to improve symptom management and survivorship of longer-term BCS.

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Author Summary: Adele Crouch is a third year BSN to PhD student at Indiana University School of Nursing in Indianapolis, Indiana. Her research area of interest is symptom science in cancer survivors, specifically cognitive dysfunction in older breast cancer survivors.

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Author Summary: Susan Ofner, M.S. is an experienced Biostatistician with the Department of Biostatistics at Indiana University School of Medicine in Indianapolis, IN. She provided the statistical support for this poster presentation.

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Author Summary: Dr. Diane Von Ah's program of research focuses on advancing the state of the science in the area of cancer survivorship including symptom management and quality of life. Her research is unique in that it combines clinical, behavioral, and basic sciences to address cancer symptom management, focusing primarily on cognitive impairment in breast cancer patients.