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The prevalence of potentially modifiable functional deficits and the subsequent use of occupational and physical therapy by older adults with cancer

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ABSTRACT

Background: Occupational and physical therapy (OT/PT) services seek to reduce morbidity, mortality, and improve the quality of life of individuals; however, little is known about the needs and use of OT/PT for older adults with cancer. The goal of this study was to describe the functional deficits and their associations with other factors, and to examine the use of OT/PT after a noted functional deficit.

Materials and Methods: This study analyzed data from an institution-based registry that included geriatric assessments of older adults with cancer linked to billing claims data. Logistic regression was used to model predictors of functional deficits. Use of OT/PT was determined and validated with medical chart review.

Results: 529 patients with cancer, a median age of 71, 78% were female, 87% Caucasian, 57% married, 53% post-secondary education, and 63% with breast cancer were included. In a multivariable model, the odds of having any functional deficits increased with age [5 year OR: 1.31, 95% CI: (1.10, 1.57)] were higher for those with a high school diploma versus those with advanced degrees [OR: 1.66, 95% CI: (1.00, 2.77)] and were higher for patients with comorbidities [OR: 1.15, 95% CI: (1.10, 1.21)]. Of patients with functional deficits only 9% (10/111) received OT/PT within 12 months of a noted deficit.

Discussion: The odds of having any potentially modifiable functional deficit were higher in patients with increasing age, comorbid conditions, and with less than a college degree. Few were referred for OT/PT services suggesting major underutilization of these potentially beneficial services.

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1. Introduction

Advanced age is associated with a decline in functional ability, increase in morbidity, and cancer risk.[1,2] By 2030, approximately 70% of all cancers will be diagnosed within older adults (65 years of age and older).[1] Although large numbers of older adults are surviving cancer, most report having fair or poor health during and after cancer treatment and limitations in activities of daily living (ADL) and instrumental activities of daily living (IADL) both during and after treatment.[1,3–5] Furthermore, after treatment, most are unable to return to their previous levels of activity, a disability which is associated with decreased quality of life and increased morbidity and mortality.[3,4,6–9] The goal of cancer rehabilitation is to improve functional status and quality of life. Questions remain, however, about the appropriate need for, access to, and predictors of usage of cancer rehabilitation with older adults.[10]

Cancer rehabilitation comprises teams with multiple therapeutic skills with occupational and physical therapy as the main services. Occupational and physical therapy evaluations and interventions are designed to improve functional status, participation in activities, gait, and cognitive ability. Specifically, occupational therapy (OT) interventions seek to increase patients' participation in meaningful activities [a.k.a. occupations], ADL, IADL, and cognitive ability.[11–13] Physical therapy (PT) interventions focus on improving physical functioning and gait impairment. Together these services have clearly been shown to reduce morbidity and improve quality of life.[11–16]

There have been limited studies determining predictors of OT/PT related functional deficits, the subsequent receipt of OT/PT services, and the differences between those who need therapy and who receive OT/PT within older adults with cancer. Most have retrospectively evaluated the perceived need for rehabilitation services after cancer treatment ends.[10,17–23] These studies lack information about the older patients and self-reported functional status that could predict the need for rehabilitation and the usage of OT/PT. It remains imperative to determine OT/PT related functional deficits for older adults with cancer because adults with functional deficits are likely to be at increased risk for hospital admission, longer stays, and/or higher readmission rates due to caregiver burden and difficulty with symptom control.[24] Also, early identification of OT/PT related functional deficits could decrease disability and overall cost.[25] Yet, identification of who can benefit from rehabilitation services and when to refer remains a barrier to care.[10,26]

Identifying cancer-related disability can be difficult because it is not often an acute event (such as stroke resulting in hemiplegia), but an accumulation of events over time, which slowly leads to disability and a loss of function. This gradual debilitation is harder to detect[24] and the need for a referral to a rehabilitation program is not as obvious. The geriatric assessment (GA) may be one way to identify patients who could derive the greatest benefits of OT/PT services.[27] The GA detects problems not likely to be discovered in routine history and physical examinations and can inform interventions that can improve quality of life and mortality in older patients.[28] It can predict the morbidity and mortality of older patients with cancer[9] as well as toxicities related to chemotherapy treatment.[29,30] In addition, the GA is feasible in both academic and community centers.[31]

In this study we used a previously validated, brief geriatric assessment tool[27] to: (1) describe the functional deficits in a sample of older adults with cancer, (2) examine the predictors of functional deficits in this population, and (3) examine the frequency of referral to OT/PT services when a functional deficit was noted.

2. Materials and Methods

2.1. Study Design, Enrollment, and Data Collection

We examined data that were collected for a large hospital-based observational cancer cohort registry (protocol LCCC 0916, NCT01137825). The "Carolina Senior: Registry for Older Adults" is an University of North Carolina (UNC) Health Care Registry, approved by the institutional review board, for older adults that contains data from a comprehensive GA. Adults were identified and recruited through the UNC Health Care oncology outpatient clinics (2009–2013) with the following eligibility criteria: age 65 years and older, able to consent to complete a GA, and English reading and writing proficiency. Eligibility was further restricted to older adults with completed clinician and patient-reported sections of the GA. Participant registry data was linked to a billing claims database (Carolina Data Warehouse [CDW]), to determine the use of OT/PT in inpatient and outpatient settings.[32]

GA administration was comprised of a clinical evaluation and patient-reported measures as previously described.[27] The full GA was either completed the day of enrollment or the patient-reported portion was sent home with the patient with a stamped envelope to return to study coordinator. The clinical evaluation portion included the following measures: the Blessed Orientation-Memory-Concentration (BOMC) test, the Karnofsky Performance Status tool (KPS), and the "Timed Up and Go" (TUG) test. The BOMC consists of six questions designed to screen for cognitive impairment.[33] The KPS is a general measure of patient independence in carrying out normal activities and self-care needs.[34–36] The TUG is a performance test of physical mobility, and measures how long it takes the patient, in seconds, to stand up from a standard arm chair, walk a distance of approximately 10 ft, turn, walk back to the chair, and sit down again.[37,38]

The GA patient-reported questionnaire section was comprised of: the Instrumental Activities of Daily Living (IADL, 7 questions),[39] a subscale of the Multidimensional Functional Assessment Questionnaire (MFAQ); a subscale of the Medical Outcomes Study (MOS) Physical Health (PH, 10 items)[40,41]; self-reporting version of the KPS[42]; a question asking how many times a person has fallen in the last 6 months[43]; and a co-morbidity scale (the Physical Health Section of the Older Americans Resources and Services [OARS]).[44] Both the IADL questions and the ADL items used a 3-point Likert scale to measure the degree to which an activity can be performed independently. On the KPS the patient rates his or her level of functional independence on a scale of 0–8, where higher rate indicates more independence. A brief section on nutrition followed, as well as an assessment of psychological distress