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Predicting participation in meaningful activity for older adults with cancer

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Abstract

Purpose—Participation in activity that is personally meaningful leads to improved emotional and physical well-being and quality of life. However, little is known about what predicts participation in meaningful activity by older adults with cancer.

Methods—Seventy-one adults aged 65 years and older with a diagnosis of cancer were enrolled. All adults were evaluated with the following: a brief geriatric assessment, the meaningful activity participation assessment (MAPA), and the Possibilities for Activity Scale (PActS). The MAPA measures participation in meaningful activity, and the PActS measures what older adults believe they should and could be doing. A regression approach was used to assess the predictors of meaningful activity participation.

Results—The PActS ($B = .56, p < .001$) was the strongest predictor of meaningful activity participation.

Conclusions—What older adults with cancer feel they should and could do significantly predicted meaningful participation in activities above and beyond clinical and demographic factors. In future research, perceptions of possibilities for activity may be useful in the design of interventions targeted to improve meaningful participation in older adults with cancer.

Keywords

Older adults; Cancer; Oncology; Occupational possibilities; Possibilities for activity; Meaningful activity; Participation; Occupational therapy; Functional status; Activity

Introduction

In older adults with cancer, functional status predicts mortality and toxicity of cancer treatments [1, 2]. However, measurements of functional performance status are typically limited to practitioner evaluation of an adult's performance ability [3–5]. Performance measurements also lack the capability to measure the personal meaning and frequency of participation in activity [6–9]. Investigators have repeatedly demonstrated significant relationships between participation in meaningful activity and emotional and physical well-being and quality of life [10–15]. Due to the large numbers of adults living with and surviving cancer, a focused effort to understand participation in meaningful activity and its determinants would provide important information for interventions to improve their quality of life.

A dearth of evidence exists about what predicts older adults with cancer's participation in personally meaningful activity. In occupational science and occupational therapy, the construct of 'occupational possibilities' is defined as what "people take for granted as what they can and should do" [16] (p. 55). This construct suggests that an adult's perception of occupational possibilities is likely to influence her or his patterns of activity participation [16–18]. In other words, activities that are considered ideal within a society (e.g., driving, being physically active, responsible, and youthful) become tacit knowledge about what adults 'should be' and 'could be' doing and represent their expectations and self-efficacy for those specific activities.

Perceptions of one's occupational possibilities are important to understand within vulnerable populations because it likely includes the effects of societal powers and pressures [16]. Older adults may feel stigmatized and/or feel restricted by their diagnosis/illness because they may not be able to attain or maintain cancer-free or disability-free status. Rudman suggested that perceived restriction of adults' occupational possibilities may result in less actual participation in meaningful activity and decreased quality of life [16].

The World Health Organization (WHO) Classification of Functioning, Disability and Health recognizes restrictions in participation (defined as problems one may have engaging in life activities) as related to, but separate from, body level functions and structure, impairments, activity limitations, and mobility [19]. In a study of patients with soft tissue sarcomas, restrictions in participation had a greater effect than physical impairments on health-related quality of life [20]. In another study examining the differences between age groups, cancer survivors over the age of 70 were 10 times more likely than those without cancer to report participation restrictions [21]. However, it remains unknown how perceived occupational possibilities (i.e., beliefs about possibilities for activity) and performance status affect participation in meaningful activity for older adults with cancer. The aim of this study was to determine predictors of participation in activities that are considered personally meaningful for older adults with cancer.

Materials and methods

In an Institutional Review Board approved prospective cohort study, adults were recruited as a sub-study of a larger study called the “Carolina Senior: Registry for Older Adults”, an ongoing observational study of adults age 65+ years. Adults were recruited from a convenience sample in an outpatient oncology clinic in North Carolina. Inclusion and exclusion criteria for both studies were the same. Inclusion criteria included the following: community-dwelling, adults 65 years or older, who were outpatients at the large cancer center, who had a diagnosis of cancer, those who agreed to participate and signed the informed consent. Adults who could not read English were excluded. Research was conducted in compliance with the Helsinki declaration, and written informed consents were obtained from each participant. Adults were approached within the outpatient oncology clinic and asked if they would like to participate. Once the study was described in detail and informed consents were signed, the primary author or a research assistant completed assessments, and participants completed self-report instruments.

Measures

Dependent variable: meaningful activity participation assessment (MAPA)—

The MAPA is a self-report instrument that measures participation in activities that older adults find personally meaningful by evaluating 28 activities in terms of meaning and frequency of participation [22]. Examples of activities in the MAPA are the following: home making/maintenance, driving, writing letters/cards, and helping others. The MAPA utilizes a Likert-type response scale with answers ranging from “not at all” (0) to “every day” (6) for the frequency subscale, and “not at all meaningful” (0) to “extremely meaningful” (4) for the meaning subscale.

For this study, two continuous MAPA scores were used as dependent variables. To calculate the *summary score*, we multiplied the frequency score by the corresponding meaning score for each item and then summed across items (range from 0 to 672). The second score was a *positive intra-individual meaning score*. This second score allows measurement of participation in activities that have greater than average personal meaning [22]. The positive meaning score adds to the analysis by examining, at the individual level, specific activities rated as meaningful (a score higher than 0) and excludes any activities that were considered not meaningful; it thereby tailors the score to the individual’s preferred pattern of activity participation. Reliability and validity of the MAPA were assessed among a convenience sample of 154 older adults who were living in the community (Cronbach’s coefficient α was 0.85) [22]. Higher scores for both the summary and the intra-individual positive scores represented greater meaningful activity participation and were positively correlated with better psychological well-being and health-related quality of life [22, 23].

Independent variables—Geriatric assessment The brief geriatric assessment (GA) included clinician- and patient-reported sections [24]. For this study, the clinician-reported section included the following (reliability and validity values for each subscale are previously reported): (1) Karnofsky Performance Status Tool (KPS), used by oncology clinicians to rate cancer patients’ functional performance; and (2) timed “Up and Go”

(TUG), a performance test of physical abilities including getting up from a chair, walking a short distance (10 ft.), walking back to the chair, and sitting down again. The KPS has exhibited an interrater reliability of .97 [5, 25, 26] and has demonstrated validity by being correlated with difficulty with balance ($r = .61, p < .001$) [25,27]. In a sample of frail older adults, the TUG had an interrater reliability score of .98 and was validated by its correlation with the Berg Balance Scale ($r = .47, p = .04$) [28, 29]. The patient-reported section of the GA for this study included: (1) demographic questions (age, sex, race, and level of education); (2) the co-morbidity subscale of the Physical Health Section of the Older American Resources and Services (OARS) questionnaire (Cronbach's coefficient $\alpha = .66$); and (3) the emotional and informational support subscale from Medical Outcome Study (MOS) Social Support Scale [30–32]. The emotional and informational support subscale demonstrated internal consistency reliability (Cronbach's coefficient $\alpha = .96$) and demonstrated convergent validity by correlation with measures of mental health ($r = .40, p < .01$) and marital functioning ($r = .50, p < .01$).

Possibilities for Activity Scale (PActS): The PActS was designed to measure the beliefs held by older adults regarding their occupational possibilities. It consists of two parts, activity expectations and activity self-efficacy [33]. There are 12 items in total. Activity expectations refer to beliefs about what a person “should do” by asking, for example, “How much do you believe that a person of your age and diagnosis should be doing creative activities?” Activity self-efficacy measures what a person believes they “could do,” by asking for example, “How much confidence do you have doing creative activities?” For each of 12 items, respondents answered each item using a 5-point Likert-type scale ranging from “very little” (1) to “quite a lot” (5). We summed across all 12 items (range of 12–60) for a total raw score. Higher scores represent more perceived possibilities for participation in activity. The PActS previously demonstrated internal consistency reliability (stratified coefficient $\alpha = .77$). The instrument also showed construct-related ($r = .58; p < .0001$), structural (Chisquare, 61.57; CFI, .97; RMSEA, 0.05; TLI, .96; NFI, .91), and known-groups validity in a sample of older adults with cancer [33].

Statistical analysis

We used hierarchical linear regression with ordinary least squares analysis to assess the independent contributions of demographics (age, sex, race, and education), health and emotional status (KPS and emotional support scores), and PActS scores on each MAPA score and to choose the most parsimonious model [34, 35]. Variables were chosen based on their overall effects within the models and the power afforded by the sample size [36]. Type of cancer was not used because of the large heterogeneity of the sample by cancer type (11 different types of cancer for 71 participants). The cut-off for tests of significance was set at $p < .05$. We used the statistical program RStudio, Version 2.15.1 (RStudio, Boston, 2012) for analyses.

Results

Seventy-one adults met the eligibility criteria and consented to participate. Table 1 shows patient characteristics. The mean age was 72 years; 41 % were male; 87 % were White, 13

% were Black; and the majority had less than a bachelor's degree (56 %). The mean MAPA summary score was 153 (range 26–276, SD 47), and the MAPA positive intra-individual meaning score mean was 153 (range 0–436, SD 91). The most common cancer types were breast (40 %) and lymphoma (11 %). The mean score on the emotional support subscale was 3 (range 1–4, SD 1); the mean PActS score was 58 (range 38–70, SD 8); and the mean number of co-morbidities was 3 (range 0–6, SD 2).

The hierarchical regression included three models. Nonsignificant variables were removed from the regression model. Model 1, which included only demographic variables (sex, race, gender, and level of education), showed little association and yielded no significant predictors of meaning activity participation ($R^2 = .02$) (see Table 2). When adding health status scores of the KPS and emotional support scale as variables in Model 2, the R^2 increased to .09 and the emotional support subscale became a significant predictor ($B = .32$, $p = .05$). The PActS score was added in Model 3. With this addition, the overall R^2 improved from .09 to .42, emotional support was no longer a significant predictor ($B = .12$), and the PActS score ($B = .56$, $p < .001$) was significant. The final model with PActS score had a large effect size ($f^2 = .69$) with a significant change in R^2 (.31) between models 2 and 3.

Similar results were obtained in the models that predicted the MAPA intra-individual positive score (Table 3). Model 1 showed little predictive power with just demographic variables ($R^2 = -.05$); and after adding health status variables (KPS and emotional support) in Model 2, the model fit did not improve ($R^2 = -.02$). Although not expected, a negative R^2 provides valuable information that the fit of the chosen model does not follow the trend of the data. As expected, the model fit improved significantly after the PActS was included (Model 3), and the PActS score ($B = .57$, $p < .001$) was a significant predictor. Model 3 had an R^2 of .31 as well as a large effect size ($f^2 = .45$) with a significant change in R^2 (.30) between models 2 and 3.

Discussion

This is the first study to show that perceived activity possibilities may predict meaningful activity participation for older adults with cancer. The results suggest that for older adults with cancer, perceptions of social ideals—the should and could of doing everyday activities—are related to participation in meaningful activity. Although an association between functional performance status and quality of life has been reported [37], this study is the first to demonstrate the predictive ability of perceived activity possibilities over and above a common measurement of functional performance status used in oncology. Clinically, this finding suggests that perceptions regarding possibilities for activity may predict participation in activities.

Some scholars have emphasized the importance of social, relational, and situational perspectives in understanding activity participation [38–41]. A focus on only functional performance ability places the responsibility for health and well-being on and within the individual without recognizing social forces that influence perceptions, behavior, participation, and health. Moreover, such a limited perspective may marginalize groups who

may experience illnesses or have financial and/or disability statuses that render them unable to “live up to” (i.e., participate in) the activities that are considered ideal [18]. As a concept and measure, possibilities for activity inherently incorporate the effects of societal influences on individuals and thereby become important to assessing vulnerable populations as well as the privileged [16, 33].

Although findings from this study provide valuable information on the participation of older adults with cancer, limitations exist. First, the small sample from a single-institution limits generalizability. Second, because of sample size limitations stratified models to determine cancer type effects were not possible. Third, we did not have information on treatment stage and/or type of treatment. Those variables could have influenced our findings. Further research with a larger sample would allow more cancer measures to be included. Fourth, the cross-sectional study design did not allow us to explore temporal or causal relationships. Future research with larger sample sizes could examine the impact of other variables, including other measures (e.g., activities of daily living, instrumental activities of daily living, and cognitive dysfunction or dementia) on the strength of the relationship between meaningful activity participation and PActS. Fifth, our sample may have under-represented dementia in ill older adult samples and its role in activity participation. Lastly, although perceived occupational possibilities, measured by the PActS score, predicted participation in meaningful activity, social desirability could have biased responses.

Despite these limitations, it is notable that perceived possibilities for activity were much more strongly associated with meaningful activity participation than physical limitations. This suggests that perceived occupational possibilities may be more significant than actual physical ability in predicting activity participation. Quality of life research should pay closer attention to the role of social influence, such as perceived possibilities for activity, in health behavior [42]. Addressing perceived possibilities for activity might enhance efforts to improve activity participation and thereby quality of life.

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Table 1

Individual characteristics

Continuous variables	<i>M</i>	<i>SD</i>
Age	72	6
Emotional support	3	1
Possibilities for activity	58	8
Meaningful activity participation	153	47

Categorical	Total (percentage of sample)
KPS	
40–70	9 (13)
80	16 (23)
90–100	46 (65)
Type of cancer ^a	
Breast	28 (40)
Lung	6 (9)
Colorectal	3 (4)
Pancreatic	3 (4)
Head and neck	2 (3)
Prostrate	4 (6)
Bladder	2 (3)
Leukemia	5 (7)
Lymphoma	8 (11)
Multiple Myeloma	4 (6)
Other	5 (7)
Sex	
Male	30 (41)
Race	
White	61 (86)
Black	9 (13)
Hispanic	1 (1)
Education	
Less than HS	6 (8)
Less than BA/BS	34 (48)
BA/BS+	15 (21)
Advanced degree	16 (23)

n = 71

KPS Karnofsky Performance Scale, *HS* High school degree, *BA* bachelors of arts, *BS* bachelor of science, *BA/BS+* at least a college degree, some graduate school

^aType of cancer *n* = 70

Table 2

Predictors of meaningful activity participation

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	β	<i>p</i> value	<i>B</i>	β	<i>p</i> value	<i>B</i>	β	<i>p</i> value
Age	-1.94	-0.14	0.25	-0.83	-0.06	0.29	-0.70	-0.05	0.62
Sex	23.54	0.15	0.19	20.70	0.14	0.63	10.05	0.07	0.50
Race	-21.33	-0.09	0.44	-22.04	-0.10	0.41	-24.17	-0.11	0.26
Education	25.91	0.17	0.18	23.15	0.15	0.22	26.80	0.18	0.08
KPS				1.16	0.20	0.11	0.86	0.15	0.14
Emotional support				21.33	0.23	0.05	11.14	0.12	0.21
PActS							6.08	0.55	<0.001
R^2		0.02			0.09			0.41	
<i>F</i>		1.41			2.23			7.98	<0.001
R^2					0.07			0.32	
<i>F</i>					0.82			5.75	

n = 71

Table 3

Predictors of the positive intra-individual meaningful activity participation

Variable	Positive intra-individual scores								
	Model 1			Model 2			Model 3		
	<i>B</i>	β	<i>p</i> value	<i>B</i>	β	<i>p</i> value	<i>B</i>	β	<i>p</i> value
Age	-0.77	-0.05	0.72	-0.30	-0.02	0.89	-0.12	-0.01	0.95
Sex	11.56	0.06	0.61	14.23	0.08	0.54	1.64	0.01	0.93
Race	13.06	0.05	0.71	12.30	-0.04	0.72	9.79	0.04	0.73
Education	13.91	0.08	0.57	13.71	0.07	0.57	18.03	0.10	0.37
KPS				0.34	0.05	0.71	-0.01	0.00	0.99
Emotional support				26.46	0.24	0.06	14.42	0.13	0.22
PActS							7.18	0.55	<0.001
R^2		-0.05			-0.02			0.28	
<i>F</i>		0.17			0.79			4.86	<0.001
R^2					0.03			0.30	
<i>F</i>					0.64			4.07	

n = 71