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Life Satisfaction and Its Correlates among Older Cancer Survivors: Critical Role of Psychosocial Factors

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Introduction

Improvements in early detection and treatment of cancer have resulted in a growing number of aging cancer survivors. Currently 60% of the 10 million cancer survivors in the US are older than 65 years [1]. Yet, research has been scarce on mental health outcomes, especially satisfaction with life (SWL), in older cancer survivors (OCSs) [2]. A number of existing studies in this arena are limited by a focus on a single cancer type such as breast cancer, small sample sizes, inclusion of people with very recently diagnosed cancer, and a lack of age-matched healthy comparison subjects (HCs) [1-3]. There are also prevalent assumptions that limit progress in our understanding of psychological well-being in this population – e.g., that positive emotions are absent, dangerous, delusional, or trivial among people with life-threatening illnesses [4]. Studies suggest that (OCSs) fare much worse physically than HCs as a result of adverse interactions among cancer, its treatment, aging, and comorbidity [1-3]. Findings on mental function suggest that OCSs have worse psychological functioning than HCs [1] experience age-associated decline in health-related quality of life [5], and have lower optimism about life expectancy than HCs [3]. Other findings are mixed, with some studies reporting similar depression scores and cognitive function between OCSs and HCs [3], while others report increased depression with age, but no association between age and SWL in OCSs [2]. Conversely, OCSs have reported resilient social well-being, spirituality, and personal growth with aging [6]. Notably, only a few reports have employed standardized instruments for assessing positive psychosocial resources such as SWL, resilience, optimism, personal mastery, and spirituality [2].

Thus, understanding SWL and its psychosocial correlates among OCSs remains an important but understudied area with high public health significance. Such research would be of value in developing interventions to increase SWL. The present study compared SWL,

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as well as health-related physical, cognitive, and psychosocial functioning in OCSs with that in demographically-matched HCs from a community-based sample. As several studies have reported worse physical and psychological function in OCSs than among HCs [1], we hypothesized that OCSs would perform worse in all spheres of functioning compared to HCs. We also examined the correlates of SWL in the two groups.

Materials and Methods

Participants

Cancer survivors and HCs came from a large multi-cohort longitudinal, community-based sample of older adults that had been selected using random digit dialing, in the Successful AGing Evaluation (SAGE) study. The SAGE data include standardized measures of physical, cognitive, and psychosocial functioning from a telephone interview and a mail-in survey completed by 1,006 participants between the ages of 50 and 99 years [7]. Two hundred and nineteen SAGE participants reported having a diagnosis of cancer (excluding skin cancer). They were compared to 219 age-, gender-, and education-matched HCs from the same sample, who did not report a history of cancer.

Cancer-related Variables—Of the 219 patients, 36 had breast cancer, 55 prostate cancer, 69 other cancers (such as colon, bladder, or uterine), and 60 unspecified cancers (– i.e., they reported a diagnosis of cancer, but did not specify its site). The mean age at cancer diagnosis was 64.9 years (*SD*=15.4). Mean number of years since diagnosis was 14.9 (*SD*=12.1). Two-thirds of the patients reported cancer-related hospitalizations.

Measures

For references to most of the following measures, see [7, 8].

Satisfaction with Life Scale—(SWLS), which consists of a 7-point Likert scale quantifying the degree of agreement with each of the following items: 1) In most ways my life is close to my ideal, 2) The conditions of my life are excellent, 3) I am satisfied with my life, 4) So far, I have gotten the important things I want in life, and 5) If I could live my life over, I would change almost nothing.

Health-related Quality of Life and Functioning—Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36), with Physical and Mental Health Composite scores.

Cognitive Functioning—Modified version of the Telephone Interview for Cognitive Status (TICS-m).

Psychosocial Functioning

Life events: Life Events questionnaire from the Women's Health Initiative study

Depression: 9-item version of the Patient Health Questionnaire (PHQ-9);

Anxiety: Brief Symptom Inventory (BSI);

Perceived Stress Scale (PSS) [9].

Resilience: 10-item version of the Connor-Davidson Resilience Scale (CD-RISC);

Optimism: Life Orientation Test–Revised (LOT-R);

Personal Mastery Scale [10];

Brief Multidimensional Measure Religiousness-Spirituality (BMMRS).

Statistical Analyses

Paired-samples t-tests compared OCSs to matched HCs on variables of interest. Bivariate Pearson correlations were obtained for both groups separately to assess the associations between different measures and SWL. To compare if correlation coefficients differed significantly between the two groups, Fisher's Z-transformations were used and tested for significance. We used a significance level of $p<.05$ for our hypothesis-based comparisons between the two groups (t-tests), but employed a more conservative alpha level of $p<.001$ for the exploratory correlations with SWL in each group to reduce the likelihood of Type I error.

Results

The OCSs had significantly worse physical health and higher number of life events than HCs. However, all other measures, including SWL, did not differ between the groups (Table 1). Within the cancer group, cancer-related variables (site, age at diagnosis, years since diagnosis, and history of hospitalization due to cancer) and SF-36 physical functioning were not associated with SWL (all $p>.001$). However, SWL in OCSs was significantly correlated with SF-36 mental functioning, cognitive function, severity of depressive and anxiety symptoms, levels of perceived stress, number of life events, resilience, optimism, and personal mastery (all $p<.001$). Similar correlations were significant with SWL in the matched HCs with additional associations of spirituality and religiosity (Table 2) and no association with cognitive function or number of life events. The z-tests revealed that only the magnitude of the association between SWL and cognitive function differed between the groups ($p<.05$).

Discussion

The OCSs had worse physical functioning and a greater number of life events than the demographically matched HCs. However, contrary to our hypothesis, OCSs did not differ significantly from HCs on SWL and various other measures of psychosocial and cognitive functioning, despite having a long history of cancer (mean 14.9 years) and a high percentage (two-thirds) of patients with cancer-related hospitalizations. SWL was not significantly associated with cancer-related variables or with physical functioning. Within OCSs, higher SWL was significantly correlated with greater mental functioning, resilience, optimism, personal mastery, and lower cognitive performance, while lower SWL was associated with more depressive symptoms, anxiety, perceived stress, and greater number of life events.

Similar correlates were observed among HCs, except for the addition of spirituality and religiosity and the lack of association between SWL and cognitive function and life events. The negative association between SWL and cognitive function in OCSs may be due to greater awareness of physical and other limitations in this group.

This study has several strengths, such as carefully matched HCs from a randomly-selected, community-based sample; over-representation of older adults (mean age 80 years); and use of validated measures of positive and negative psychological functioning. A limitation of this study is its cross-sectional nature, thereby nullifying demonstration of cause-and-effect relationships among the variables.

We have previously reported a paradox of aging among community-dwelling older adults – i.e., while their physical health and some aspects of cognitive function decline with age, self-rated successful aging and SWL are higher in older people [7]. The predictors of well-being in these subjects are higher levels of resilience and optimism and lower levels of depressive symptoms and perceived stress.

Positive beliefs and emotions have also been linked to good outcomes amongst those experiencing difficult times in their lives [4]; however the literature on psychosocial functioning in cancer survivors is limited and shows mixed results. For example, younger women have been reported to display worse physical and psychosocial functioning and emotional well-being than older breast cancer survivors [4, 5]. Thus the older age of our sample may help explain why we did not find many differences between OCSs and HCs on SWL or other psychological measures. The reason why older patients do better psychosocially is not clear, but may include factors such as possible survivor bias and greater acceptance of cancer. Longitudinal studies are needed to directly address this issue.

Our results point to the importance of considering both positive (resilience, optimism, personal mastery) and negative (depression, anxiety, perceived stress, life events) aspects of psychosocial functioning, as well as cognition, for the purpose of enhancing SWL in OCSs. Future research should investigate if changes in these factors lead to better SWL among OCSs. Based on the results of such studies, interventions may be developed and tested to improve SWL in this population. There are a few studies reporting improvement in well being of cancer survivors following treatment of their depression and anxiety with medications, as well as with psychosocial interventions such as meditation, resilience training, and stress reduction [9, 10]. Randomized clinical trials with adequate sample size and validated instruments for measuring outcomes, as well as mediators, are needed in OCSs.

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Key Points

- Published literature on psychosocial functioning among older cancer survivors is limited, and results have been somewhat mixed.
- We compared 219 older cancer survivors (mean age of 80) with age-, gender-, and education-matched healthy subjects on health-related physical, cognitive, and psychosocial functioning, and investigated the correlates of satisfaction with life (SWL) in each group.
- Cancer survivors had worse physical health and more life events, but were remarkably similar to the demographically matched comparison group on most psychosocial measures, including SWL.
- SWL among cancer survivors was not associated with physical health or cancer-related variables, but was significantly correlated with cognition, and psychosocial measures of resilience, optimism, personal mastery, depression, anxiety, life events, and perceived stress.
- Longitudinal studies and intervention research are needed to understand the role of psychosocial variables and their potential to improve SWL among older cancer survivors.

Table 1

Participant Characteristics

	Cancer (N=219)		No Cancer (N=219)		Statistics		
	Mean (or %)	SD	Mean (or %)	SD	t or χ^2	df	*P*
Age (years)	80	11	80	11	..	..	..
Gender (% women)	49.30%	..	49.30%	..	..	..	..
Education (%)							
≤High school	25.60%	..	22.80%	..	..	..	..
Some college to bachelor	57.50%	..	58.40%	..	..	..	..
Post-graduate degree	16.90%	..	18.70%	..	..	..	..
Ethnicity (%)					0	2	1
Caucasian	85.8	..	85.8	..	..	..	..
Latino	9.6	..	9.6	..	..	..	..
Other	4.6	..	4.6	..	..	..	..
SWLS score	26.1	5.5	26.6	5.7	−0.9	209	0.37
Health-Related Functioning							
SF-36 Physical Functioning	41.3	11.3	43.6	10.9	−2.1	197	**0.04**
SF-36 Mental Functioning	56.1	7.9	56.4	7.1	−0.4	197	0.67
Cognitive Functioning							
Objective Cognitive Performance (TICS-m)	32.9	5.4	32.4	5.8	1.1	218	0.29
Psychosocial Functioning							
Resilience (C-DRS)	31.2	6.3	31.4	6.1	−0.3	198	0.74
Optimism (LOT-R)	23.2	3.4	23.2	3.4	0.1	206	0.91
Personal Mastery (PMS)*	14	3.1	13.5	3.3	1.4	206	0.17
Daily Spiritual Experiences (BMMRS)*	18.5	8.5	19.3	9.1	−0.9	194	0.35
Overall Religiosity (BMMRS)*	4.9	1.7	4.9	1.9	−0.3	196	0.77
Life Events	3.5	3.5	2.8	2.7	2.1	175	**0.03**
Perceived Stress (PSS)	12.2	5.4	11.7	5.7	0.9	199	0.37
Depression (PHQ-9)	2.3	3	2.3	3.2	0.2	198	0.83
Anxiety (BSI)	1.6	2.5	1.7	2.9	−0.7	207	0.52

SD = standard deviation; df = degrees of freedom;

SWLS = Satisfaction with Life Scale;

SF-36 = Medical Outcomes Study 36-Item Short-Form Health Survey;

TICS-m = modified version of the Telephone Interview for Cognitive Status;

C-DRS = 10-item version of the Connor-Davidson Resilience Scale;

LOT-R = Life Orientation Test–Revised;

PMS = Personal Mastery Scale;

BMMRS = Brief Multidimensional Measure Religiousness-Spirituality;

LES = Life Events Scale;

PSS = Perceived Stress Scale;

PHQ-9 = 9-item version of the Patient Health Questionnaire;

BSI = Brief Symptom Inventory.

* **Note**: Lower scores indicate greater personal mastery (PMS) and higher levels of religiosity and spirituality (BMMRS).

Table 2
Correlations between Satisfaction with Life and Variables of Interest

	Cancer (N=219)			No Cancer (N=219)		
	N	**r**	***P***	**N**	**r**	***P***
Demographics						
Age	216	0.19	0.006	213	0.11	0.104
Gender	216	0.17	0.014	213	0.07	0.328
Education	216	0.07	0.3	213	0.09	0.179
Ethnicity	216	0.02	0.809	213	0.06	0.405
Health-Related Functioning						
SF-36 Physical Functioning	209	0.16	0.019	201	0.21	0.002
SF-36 Mental Functioning	209	**0.43**	<0.001	201	**0.49**	<0.001
Cognitive Functioning						
Cognitive Function (TICS-m)	216	− **0.23**	<0.001	213	−0.04	0.616
Psychosocial Functioning						
Resilience (C-DRS)	208	**0.35**	<0.001	204	**0.47**	<0.001
Optimism (LOT-R)	211	**0.35**	<0.001	207	**0.45**	<0.001
Personal Mastery (PMS)*	211	− **0.39**	<0.001	207	− **0.41**	<0.001
Daily Spiritual Experiences (BMMRS)*	204	−0.22	0.002	202	− **0.24**	<0.001
Overall Religiosity (BMMRS)*	201	−0.13	0.061	206	− **0.25**	<0.001
Life Events	196	− **0.24**	<0.001	190	−0.12	0.087
Perceived Stress (PSS)	208	− **0.51**	<0.001	203	− **0.53**	<0.001
Depression (PHQ-9)	208	− **0.46**	<0.001	204	− **0.41**	<0.001
Anxiety (BSI)	211	− **0.35**	<0.001	208	− **0.24**	<0.001

Values in bold indicate significance at $p<.001$, that was required to correct for multiple comparisons.

Refer to the footnote under Table 1 for definitions of abbreviations.

*Note: Lower scores indicate greater personal mastery (PMS) and higher levels of religiosity and spirituality (BMMRS).