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Individual Differences in Well-Being in Older Breast Cancer Survivors

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Abstract

Older women who survive breast cancer may differ significantly in their long-term well-being. Using a risk and protective factors model, we studied predictors of well-being in 127 women age 70 and above with a history of at least one year's survival of breast cancer. Mean post-cancer survivorship was 5.1 years. Using life satisfaction, depression and general health perceptions as outcome variables, we assessed whether demographic variables, cancer-related variables, health status and psychosocial resources predicted variability in well-being using correlational and hierarchical regression analyses. Higher age predicted increased depression but was not associated with life satisfaction or general health perceptions. Cancer-related variables, including duration of survival, and type of cancer treatment, were not significantly associated with survivors' well-being. Poorer health status was associated with poorer well-being in all three dependent variables. After controlling for demographics, cancer-related variables, and health status, higher levels of psychosocial resources including optimism, mastery, spirituality and social support predicted better outcome in all three dependent variables. While many older women survive breast cancer without severe sequelae, there is considerable variability in their well-being after survivorship. Successful intervention with older breast cancer survivors might include greater attention not only to cancer-specific concerns, but also attention to geriatric syndromes and functional impairment, and enhancement of protective psychosocial resources.

Keywords

Elderly; Older; Breast cancer; Survivor; Quality of life; Physical functioning; Psychological functioning

1. Introduction

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According to the American Cancer Society, breast cancer is the most common site for newly diagnosed cases in women, affecting a projected 211,000 and resulting in 40,000 estimated deaths in 2005 in the United States alone [1]. Older women have a significantly elevated risk of developing breast cancer, when compared to younger age groups [2]. Despite the fact that breast cancer affects a proportionately higher percentage in older women, research that has studied the unique experiences of this older cohort still lags behind the research of younger breast cancer survivors.

Comparative research has identified that older breast cancer survivors are generally more likely to have reduced psychosocial impact (e.g. levels of depression, social ties, and emotional well-being) but may suffer from greater impairment in physical health-related quality of life outcomes than their younger counterparts [3-6]. Some researchers have suggested that older breast cancer survivors may have increased psychological resilience to breast cancer diagnosis due to their life stage than younger women, in that potential threats to sexuality and fertility, career, and ability to care for young children are minimal in older breast cancer survivors [7]. However, older adults may also have special vulnerability to the effects of cancer, especially with advanced age, due to age-related comorbid illness and functional impairment [8]. One study of women 67+ years noted that axillary dissection increased the risk of arm problems, which negatively impacted both physical and mental health functioning [9]. A sample of women 50+ years reported increased age was associated with lower levels of social support, reduced network size, and increased levels of uncertainty [10]. In a longitudinal study of women 65+ years, age and cancer treatments (i.e. surgery type with or without radiation, whether adjuvant therapy or chemotherapy was undertaken) were not found to be predictors of self-rated health 15 months after surgery [11]. Age and cancer treatments were also not predictive of scores to a cancer specific psychosocial quality of life scale (i.e. Cancer Rehabilitation Evaluation System – Short Form [12]). However, a significant longitudinal decline was reported in mental health, and higher levels of initial comorbidity were associated with this decline [11].

Although some previous research has identified “older” breast cancer survivors from ages 50-55 and above, age-related comorbid illness and functional impairment are most prevalent at more advanced ages [5,10,13,14]. In our research, we have focused on women over age 70 due to their greater vulnerability to health problems from comorbid conditions and likely differences in coping skills and resources available and utilized.

2. Method

2.1. The Stress-Coping Model

To enable a more comprehensive investigation of salient factors for well-being, this study utilizes the stress-coping model. The field of psycho-oncology in particular has often advocated and incorporated the stress-coping model of Lazarus and Folkman [15] to investigate the psychological impact of cancer [16-19]. Coping with cancer is a process that enables the individual to effectively manage a variety of demands, either internal or external, that the individual perceives as being challenging or surpassing the resources available to them [15]. Furthermore, the diagnosis, treatment and long-term ramifications of surviving cancer may involve a dynamic process of adapting to changing health status and unforeseen experiences. Therefore, the present study aims to provide a broader application of the stress process model, by investigating risk and protective factors specifically relevant to older breast cancer survivors. This encompasses demographic variables (age and years of education), cancer-related variables (whether mastectomy surgery was undertaken, time from diagnosis, and whether chemotherapy was undertaken) and health status variables (fatigue, comorbidity and current physical functioning). Demographic, cancer-related and health variables, for the purposes of this study, are considered risk factors. Their relative importance on the well being

of older breast cancer survivors were evaluated concurrently, along with psychosocial resource variables which we consider to be protective factors.

Five psychosocial resource variables were investigated in the present study; social support, satisfaction with social support, spirituality, mastery and optimism. These five psychosocial resources were chosen because they may have particular relevance for older women. Older women with breast cancer may be at more risk for having compromised social support networks due to widowhood, loss of friends and co-workers [20], which may indicate that social support may play a more crucial role in long term survivorship. Past research has generally indicated frequency of social support as an important predictor of well-being [21]. Other studies have established that satisfaction with social support is an important factor to consider because subjective appraisal of the quality of social support received can also impact well-being in both positive and negative ways (e.g. over protectiveness leading to greater dependency) [22,23]. Thus, we also incorporate satisfaction with social support as an independent predictor, to establish whether frequency or quality of social contacts have a differential effect on well-being in older breast cancer survivors.

Similarly, a sense of mastery and thus having a feeling of control in one's current life situation, is pertinent to assess in an age group where restricted finances, physical limitation [24] and social isolation can profoundly impact overall psychological well-being and in the latter case even be a risk factor for increased mortality [25,26]. Optimism is considered a disposition of personality in which anticipation of the future is viewed in a positive outlook [27]. Furthermore, optimism is considered a stable trait where there is a global expectation of good events and outcomes rather than undesirable events [28]. Though dispositional optimism appears to remain stable throughout the adult life span [29], it is important to examine whether this trait is prominent when faced with a life-threatening condition in older age. Finally, spirituality is increasingly considered an important factor in coping with chronic and life threatening illnesses [for reviews, see 30,31] and there is evidence to suggest that it can be as significant as physical health on overall well-being of cancer survivors [32]. We consider these five psychosocial resources to be potentially protective and expect that they will mitigate the psychological impact of cancer diagnosis and treatment and therefore assist in successful long term survivorship.

This study specifically assessed well-being in older breast cancer survivors using outcome measures that provide a broad range of domains. Specifically, three outcome measures of life satisfaction, depression and general health perceptions were chosen because they provide positive and negative indices of psychological well-being and subjective health related well-being. It is important to assess both positive and negative aspects of psychological well-being because they are not inverse functions due to having different correlates, antecedents and functions [33-35]. Subjective perceptions of health are important to study in older adults, since they have been found in many studies to prospectively predict mortality, beyond the effects of other health variables [36]. We predicted that psychosocial coping variables would be associated with higher levels of life satisfaction and general health perception, and lower levels of depression, after controlling for demographic, cancer related, and health status variables.

2.2. Participants

Using the cancer registry at H. Lee Moffitt Cancer Center and Research Institute, in Tampa, Florida, 274 women were identified as being breast cancer survivors with a current age of 70 or older. Overall 127 women agreed to participate, 77 refused, 64 were unable to be contacted (either after 5 attempts, or due to no longer residing at listed address, or telephone number). Six women had died from the time of the last update of the cancer registry data. Participation rate of those who were actually contacted was 62%, and participants received no remuneration.

2.3. Procedure

The research protocol was approved by the Institutional Review Board of the University of South Florida, and was also conducted with accordance to The Code of Ethics of the World Medical Association. Eligible study participants were contacted by mail, to notify them of the study, and to inform them that follow-up phone calls would be made by research staff to determine whether they would be interested in participating. Contact via telephone with each individual was up to a maximum of 5 attempts, after which, if contact had not been made, the potential participant was excluded. Upon agreement to participate, subjects were sent a questionnaire packet for completion prior to an in-home interview. The participants were advised to contact research staff if they encountered any difficulties in responding to questions in the questionnaire packet. Within 2 weeks of receipt of the questionnaire, research staff conducted semi-structured interviews at the participants' home, whereby they obtained written informed consent and then administered additional instruments.

2.4. Measures - Independent Variables

To investigate the possible effect of demographic variables, current age, and years of completed education were ascertained. Cancer-related variables were assessed by whether participants had had mastectomy surgery (Y/N), chemotherapy treatment (Y/N), and time elapsed since their initial diagnosis. Functional impairment was assessed using the Physical Functioning subscale of the Medical Outcomes Study/ Short Form (SF-36) [37]. High scores indicate ability to perform physical tasks without limitation due to health reasons whereas lower scores indicate compromised physical performance. The range of scores from 0 – 100 are derived from five items and Cronbach's alpha for this study was 0.91.

A brief medical questionnaire comprising of 12 items, was administered to gain details of current co-morbid illness and chronic conditions. The participants were specifically asked whether a medical doctor had ever diagnosed them with the particular health conditions. Examples include congestive heart disease, diabetes, arthritis, etc., and were recorded as a total count of acknowledged conditions. These items were chosen to allow comparison to a control group of older women who had not had breast cancer, the results of which are detailed elsewhere [8].

The Fatigue Symptom Inventory was administered to determine the impact of fatigue on current levels of physical activity [38]. It comprises of 13 items, scores range from 0-96, with higher scores indicating greater impact of fatigue. Cronbach's alpha in this study was 0.92.

Psychosocial protective factors were assessed using the following measures. Optimism was measured using the 10 item Life Orientation Test – Revised (LOT-R) [27]. This scale uses a 5 choice Likert response (i.e. I agree a lot, I agree a little, I neither agree nor disagree, I disagree a little, I disagree a lot) to assess the degree in which a participant subscribes to an optimistic outlook. Example questions include, “in uncertain times, I usually expect the best”, and “I hardly ever expect things to go my way”. Scores range from 0 – 24 with higher scores indicate higher levels of optimism. Cronbach's alpha in this study was 0.75.

Mastery was measured using the Mastery Scale [39]. This scale assesses the sense of mastery and control versus helplessness that participants felt about their current lives. It is comprised of seven items, including “what happens to me in the future mostly depends on me”, and “there is little I can do to change many of the important things in my life”, rated on a 4 point Likert-type scale from strongly agree, agree, disagree, and strongly disagree. Scores range from 0 – 28, with higher scores indicating greater mastery. Cronbach's alpha in this study was 0.77.

Spirituality was assessed using the 12 item Functional Assessment of Chronic Illness Therapy – Spirituality Scale (FACIT-SP) [40]. Higher scores (range 0 – 48) indicate higher levels of

spiritual well-being. Example items include “I feel peaceful”, “I have a reason for living”, “I find comfort in my faith or spiritual belief”, which are assessed on a five point Likert-type scale. Cronbach's alpha for this sample was 0.82.

Total social support and satisfaction with support were measured with a composite scale [22]. Quantity of social support in the month prior was assessed using 11 items in areas including tangible, informational, and emotional support. Scores can range from 0-44, with higher scores indicating greater levels of social support. Cronbach's alpha was 0.76. In addition, satisfaction with support was derived from 3 items that asked the participant to rate their level of satisfaction in the support they had received for the various tasks/emotional help from the 4 possible responses of not at all satisfied, a little, moderately, and very satisfied. Scores range from 0 – 12, higher scores indicating higher satisfaction with support.

2.5. Outcome Measures

The Life Satisfaction Index – Z is the 13 item short form version of a measure that indicates self-perceived morale level and general life satisfaction [41]. Participants are asked whether they agree, disagree or unsure one way or the other, to statements including “most of the things I do are boring or monotonous” and “I am just as happy as when I was younger”. Scores range from 0 – 26, higher scores indicating greater life satisfaction. Cronbach alpha for this sample was 0.78.

Depression was measured using the Geriatric Depression Scale-Short Form (GDS) [42]. The GDS is a measure that is designed to assess depression in older adults and was developed and standardized strictly on samples of older people [43]. Participants respond to 15 statements in yes/no format. Example items include “are you in good spirits most of time”, “do you often feel helpless” and “do you feel your situation is hopeless”. Scores range from 0 – 15, with below 5 indicating no depression, 6-10 indicating mild/moderate depression, and 11-15 indicating severe depression. Cronbach alpha for this study was 0.69. The terms depression and depressive symptomatology are used synonymously forthwith, although it is recognized that higher scores of depressive symptomatology on self-report measures are not sufficient, in of themselves to clinically diagnose depression, however they do indicate those who are at elevated risk.

Current views of overall health was assessed using the General Health Perceptions subscale of the widely used and validated Medical Outcomes Study/Short Form (SF-36) [37]. It comprises of 5 items and scores range from 0 – 100. Higher scores indicate the extent to which people perceive their physical health as good, whereas lower scores are indicative of poor self-perceived health poor. Cronbach alpha for this sample was 0.79.

2.6. Statistical Analyses

The data was analyzed by initially assessing Pearson Product Moment correlations between the independent variables and the outcome measures. Further analysis was conducted using 3 separate hierarchical regressions for life satisfaction, depression and general health perceptions. The same variables and order of entry were used in each regression. First, demographic variables (i.e. current age and years of education) were entered into the model. Second, cancer-related variables (whether participant had undergone mastectomy, whether the participant had received chemotherapy, and time elapsed from their initial diagnosis) were entered. Third, health status variables were entered (fatigue, comorbidity and current physical functioning). The last block of variables entered into the model were the psychosocial variables (i.e., optimism, mastery, spirituality, total social support received, satisfaction with social support) that we considered protective factors. The regression analyses allowed us to ascertain whether the psychosocial resources remain significant predictors of life satisfaction, depression

and general health perceptions after controlling for demographic, cancer-related and health status variables. An alpha level of .05 was used for all tests of statistical significance.

3. Results

3.1. Background Characteristics

Due to careful quality checks during data collection, there was no missing data. Variables were checked for normality of distribution using skewness and kurtosis indicators, and all were found to be in acceptable range and requiring no transformation. The 127 subjects had a mean age of 78.2 years, were predominantly White (96%) and had an average of 5.1 years post-cancer survivorship. Forty-eight percent of the survivors had less than 5 year post diagnosis, and 52% having 5 or more years of post diagnosis survivorship. Tamoxifen use was reported by 27.6%. The respective cancer stage at diagnosis according to the Tumor registry for this sample was 12.6% for in situ, 57.5% for localized, 2.4% for regional direct extension, 22.8% for regional nodes, and 4.8% for distant. Comorbidity was evident as expected with the mean age of this sample. The most common chronic conditions noted were arthritis (63%), osteoporosis (34.6%), congestive heart disease (10.2%) and diabetes (10.2%).

The means for the main outcome measures are reported in Table 1. Data reported elsewhere by this project compared these mean outcomes with a group of women without a history of breast cancer equated for age and education with the survivors [8]. The breast cancer survivors fared significantly worse in terms of general health perceptions, and life satisfaction, but did not differ in depression.

3.2. Correlations

Table 2 details the correlations between the three outcome measures and the independent variables, including demographic, cancer-related, physical health related, and psychosocial resource variables. Age was the only demographic variable that was significantly correlated with our outcome measures whereas no cancer related variable was found to significantly correlate to any outcome variable. Although no significant correlations were apparent on univariate analysis, it was still important to consider if cancer related variables may become a significant predictor if grouped together. All physical health related variables showed significant correlations with all three outcome measures, with the exception of comorbity having no significant correlation with life satisfaction, or depression. Optimism, mastery and spirituality were all highly correlated to life satisfaction, depression and general health perceptions. Satisfaction with social support was correlated to life satisfaction and depression, and total social support was correlated to general health perceptions.

As half of the sample was within 5 years of diagnosis, and therefore possibly still under active hormonal therapy, separate analyses were conducted for Tamoxifen users versus non-users and cancer stage to investigate their association with the three outcome measures. Tamoxifen users reported significantly lower levels ($M = 1.39$) of depressive symptomatology, than the non-Tamoxifen users ($M = 2.22$; $p = 0.036$). However, both groups' means were very low, and below the screening cutoff for possible depression. Further analysis of items on the GDS, revealed no significant differences between Tamoxifen users versus non-users across any of the individual items. Tamoxifen use was not significant for life satisfaction, and general health perceptions. Analysis by cancer stage also revealed no significant difference between groups dichotomized as localized, and those regionally or distantly invasive across all three outcome variables. Given the general lack the association between the outcome measures for both Tamoxifen use and cancer stage, these variables were not included in the regression analysis.

3.3. Regression Model- Life Satisfaction

For life satisfaction (see Table 3), the regression model accounted for 38.8% of the total variance in the scores. Demographic variables and cancer related variables did not predict significant variance in the model. However, health status did predict a significant amount of variance in life satisfaction. Lower fatigue and higher physical functioning predicted higher life satisfaction. Psychosocial variables added significant additional variance to the model. High levels of mastery, spirituality and optimism predicted high levels of life satisfaction, even after controlling for all other variables in the model.

3.4. Regression Model - Depression

In the hierarchical regression model to predict depression (see Table 4), 49.7% of the variance in the scores was accounted for. Significant variance was predicted by demographic variables, with increasing age predicting higher levels of depression. The combination of cancer related variables were not significant. However, health status variables predicted significant additional variance, with high levels of fatigue and poorer physical functioning associated with higher levels of depression. Psychosocial variables also added significant variance. Lower levels of satisfaction with support, optimism and spirituality predicted higher levels of depression, even after controlling for all other variables.

3.5. Regression Model - General Health Perceptions

The regression model to predict general health perceptions (see Table 5), accounted for 50% of the variance. Demographic and cancer related variables did not predict significant variance. Health status variables accounted for a significant amount of variance. High levels of fatigue and lower levels of physical functioning predicted lower scores on general health perceptions. Finally, psychosocial variables added significant variance, though only higher levels of optimism predicted higher scores on general health perceptions after controlling for all other variables in the model.

4. Discussion

Overall, the results support the importance of psychosocial resources as protective factors for older women coping with breast cancer survivorship. Demographics, specifically age, were only significant in predicting depression, and accounted for very little variance. Cancer related variables showed little predictive value across all three outcome variables. Thus, regardless of the type of surgery performed, whether chemotherapy was part of the treatment plan, or time from initial diagnosis, the combination of these cancer related factors had no significant impact on life satisfaction, depression or general health perceptions of the older breast cancer survivors in this sample. This finding supports previous research that has reported that age and treatment regimens do not generally play a significant role in overall quality of life in older breast cancer survivors [9,11,44].

This finding also suggests that older breast cancer survivors can indeed be resilient, and that passage of time from initial cancer diagnosis and treatment may minimize or stabilize the physical and psychological impact of the type of breast cancer treatment received long term. While the experience of breast cancer may lead to lasting effects, individual variability from treatment options becomes less significant [8].

Health status variables of fatigue and physical functioning were significantly associated with life satisfaction, depression and general health perceptions. This is consistent with a large literature demonstrating that decrements in daily functioning are of central importance to determining well-being in older adults [24,45,46]. Fatigue and poor physical functioning had stronger associations with depression, life satisfaction and general health perceptions than the

mere number of chronic conditions that were reported. An implication for clinical practice is to thoroughly assess the symptomatology of comorbid conditions in breast cancer survivors, to help address illness that results in fatigue (e.g. heart disease and osteoporosis) and physical limitation. Exclusive emphasis on the cancer diagnosis could result in lack of appropriate surveillance and treatment of other conditions that are critical to the well-being of older patients. This may be especially true for older women who would be susceptible to various geriatric syndromes by virtue of their advancing age. Thus, these factors may combine to effectively prevent some older breast cancer survivors from returning to pre-diagnosis levels of functioning.

The most important finding of this study was that the salience of psychosocial resources, that were found to significantly predict individual differences in life satisfaction, depression and general health perceptions, even after controlling for demographics, cancer related variables, and health status. This highlights the potential protective importance of these psychosocial factors in coping and becoming a successful breast cancer survivor in older age. Even after controlling for demographic, cancer-related, and health status variables, psychosocial resources explained about 19% of variance in life satisfaction, 15% of variance in depression, and 8% of variance in general health perceptions.

Optimism was unique in being the only psychosocial variable that was significant on regression analyses across all three of the outcome measures. Increased optimism was associated with less depression, and increasing levels of life satisfaction and general health perception. Optimism has previously predicted positive adjustment to breast cancer in a longitudinal study [47]. Though considered by some researchers to be a dispositional trait, other researchers have suggested that optimism is a habitual explanatory style when confronted with an unpleasant event, which could be amenable to change [48]. Thus, if an optimistic outlook can be fostered in breast cancer survivors, it could ameliorate depressive symptoms and help people regard their own health, and current life circumstances in a more favorable way.

Spirituality was a significant psychosocial factor associated with higher life satisfaction and lower depression. It may be reflective of the importance of having faith and finding meaning in one's life to successfully counteract the physical and psychological insults that can accompany breast cancer. This finding is in concordance with other studies that have reported spirituality or having a sense of purpose to ones' life as an important coping mechanism for combating cancer [49-51].

Mastery was significant in predicting higher satisfaction with life. Interventions that specifically target and increase mastery would be beneficial to incorporate into the package of care a cancer survivor receives. Satisfaction with support predicted lower depression scores in the sample though quantity of social support had no impact as a significant predictor on the regression analyses across any of the outcome measures. Again, this may reflect that successful breast cancer survivors have unique qualities that have enabled them to overcome their difficulties, such as an independent and self-directed personality, that has effectively enabled them to surmount the trauma of breast cancer. Another explanation may be that the highly educated and minimally impaired women in this sample were not impaired to the physical or emotional degree that would have necessitated high levels of social support.

The finding that social support, an interpersonal variable, had the weakest associations with the outcome measures may suggest that internal resources (optimism, spirituality and mastery) are critical in coping with cancer. A possible explanation may be that despite receiving all possible support from others, it is still essentially a deeply personal experience. The importance of optimism, spirituality and mastery is supportive of the revised stress and coping model [52] which hypothesizes that when problem focused or emotion based coping is unable to

alleviate the stressful issue, i.e. dealing with the ramifications and treatment effects of a cancer diagnosis, then meaning-based coping that leads to benefit finding and other positive emotional states may be especially important. Folkman identifies 4 possible types of meaning-based coping; positive reappraisal, revised goals, spiritual beliefs and positive events. As our study has shown, optimism, spirituality, and mastery, are indeed paramount to well-being in older breast cancer survivors, and these internal resources can greatly assist in optimizing meaning-based coping for the duration of the cancer experience.

Strengths of the present study include the concurrent investigation of a variety of variables that cover a broad spectrum of health and psychosocial factors. We also utilized well-known and widely validated standardized instruments that can provide cross-comparison with future studies in this field. Our sample is novel in the current literature for having a high mean age at time of participation, coupled with a 5 year mean survivorship interval.

This study has several limitations since we used convenience sampling rather than a randomly selected population sample. The present sample may include biases such as over-representation of healthier, White, and highly educated cancer survivors. The data in this study was derived from self-report measures, and can be a source of potential bias. A comprehensive geriatric assessment that includes a range of performance-based measures and greater attention to comorbid conditions would be very beneficial to future studies in this area.

Potential cognitive or sensory impairment was not formally assessed in this sample. However, the relative impact of these aspects was probably minimal in the current sample. Regarding cognitive impairment, the participants were all sufficiently lucid, alert and attentive to answer survey questions without any difficulty. As far as vision and hearing difficulties, there were no participants that were impaired to the extent that they were unable to read and complete surveys or understand questions posed by Research Assistants. Nevertheless, cognitive and sensory impairment may very well factor into quality of life for older breast cancer survivors.

The cross-sectional design did not allow us to assess whether psychological factors prospectively predict well-being or track longitudinal change. Previous research has identified several distinct trajectories in physical and psychological functioning from four years after initial diagnosis [53]. Increasing age was associated with lower functioning and deterioration over time. However, the mean age for that study was 48 years, and the oldest participant was 75 years. Our findings confirm that considerable inter-individual variability exists in life satisfaction, depression and general health perceptions in this older cohort of breast cancer survivors so it is crucial to investigate trajectories of change in well-being specifically in older women.

In a cohort where increasing health issues are prevalent, and may have limited opportunity for improvement, our findings would suggest greater emphasis and attention to research on internal psychosocial factors that may be more amenable to intervention. Their role in maximizing quality of life outcomes should be capitalized upon. Intervention studies that enhance optimism and mastery in older adults need to be developed and implemented to assess evidence-based outcomes for future psychological adjustment and treatment results. Furthermore, prospective longitudinal studies that monitor these interventions would assist researchers and clinicians to delineate the timing and implementation of these training strategies for maximum efficacy.

Further study to develop intervention programs to bolster these internal psychosocial resources will provide a valuable weapon to the arsenal of treatment and care currently provided. Older breast cancer survivors deserve further research attention to ultimately benefit from specifically tailored programs that will enable them to surmount the challenges they may encounter due to their unique life circumstances.

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Table 1

Mean & Standard Deviation for Main Outcome Measures

Outcome Measure	Mean	Standard Deviation	Range	Range of Instrument
Life Satisfaction	18.21	3.80	5-21	0-26
Depression	1.98	2.04	0-10	0-15*
General Health Perceptions	67.97	19.81	15-85	0-100

* A lower score indicates less depressive symptoms.

Table 2

Means, Standard Deviations, and Correlations of Independent Variables and Main Outcome Measures of Life Satisfaction, Depression, and General Health Perceptions.

Independent Variable	M	SD	Correlations		
			Life Satisfaction	Depression	General Health Perceptions
Demographic					
Age	78.23	5.01	−.174	.249**	−.057
Education (years)	13.57	2.43	.069	−.150	−.001
Cancer Related					
Mastectomy (% who had mastectomy)	1.58 (41.7%)	.49	−.003	−.025	−.026
Time from diagnosis (years)	5.11	2.74	.069	.050	−.080
Chemotherapy (% who had chemotherapy)	17.3 (17.3%)	.38	.007	.026	−.100
Health Status					
Fatigue	30.78	20.96	−.358**	.476**	−.560**
Comorbidity	1.98	1.15	−.099	.165	−.247**
Physical Functioning	61.06	27.24	.363**	−.467**	.548**
Psychosocial Resources					
Optimism	19.18	4.26	.421**	−.452**	.435**
Mastery	19.06	2.95	.348**	−.316**	.234**
Spirituality	33.46	6.11	.318**	−.336**	.305**
Social Support	23.11	6.15	.060	.012	−.223*
Satisfaction with Support	9.57	2.05	.317**	−.294**	.099

* $p < 0.05$ (2-tailed)

** $p < 0.01$ (2-tailed).

Table 3

Hierarchical Regression Analysis Predicting Life Satisfaction in Older Breast Cancer Survivors (n=127).

Variables	Standardized Beta Coefficients	R^2	ΔR^2
Model 1: Demographics		.034	.034
Age	−.170		
Education (years)	.060		
Model 2: Cancer Related		.037	.003
Mastectomy	.003		
Time from diagnosis (years)	.053		
Chemotherapy	−.022		
Model 3: Health Status		.200	.163***
Fatigue	−.249*		
Comorbidity	.063		
Physical Functioning	.244*		
Model 4: Psychosocial Resources		.388	.188***
Optimism	.181*		
Mastery	.185*		
Spirituality	.162*		
Social Support	.057		
Satisfaction with Support	.176		

* p=<0.05 (2-tailed)

** p<0.01 (2-tailed)

*** p<0.001 (2-tailed).

Table 4

Hierarchical Regression Analysis Predicting Depression in Older Breast Cancer Survivors (n=127).

Variables	Standardized Beta Coefficients	R^2	ΔR^2
Model 1: Demographics		.081	.081**
Age	.241**		
Education (years)	−.137		
Model 2: Cancer Related		.090	.009
Mastectomy	−.010		
Time from diagnosis (years)	.063		
Chemotherapy	.072		
Model 3: Health Status		.352	.262***
Fatigue	.358***		
Comorbidity	.010		
Physical Functioning	−.233*		
Model 4: Psychosocial Resources		.497	.145***
Optimism	−.165*		
Mastery	−.098		
Spirituality	−.161*		
Social Support	.027		
Satisfaction with Support	−.216*		

* p<0.05 (2-tailed)

** p<0.01 (2-tailed)

*** p<0.001 (2-tailed).

Table 5

Hierarchical Regression Analysis Predicting General Health Perceptions in Older Breast Cancer Survivors (n=127).

Variables	Standardized Beta Coefficients	R^2	ΔR^2
Model 1: Demographics		.003	.003
Age	−.057		
Education (years)	−.004		
Model 2: Cancer Related		.025	.022
Mastectomy	−.050		
Time from diagnosis (years)	−.092		
Chemotherapy	−.122		
Model 3: Health Status		.416	.390***
Fatigue	−.375***		
Comorbidity	−.047		
Physical Functioning	.336***		
Model 4: Psychosocial Resources		.500	.084**
Optimism	.187*		
Mastery	−.018		
Spirituality	.132		
Social Support	−.163		
Satisfaction with Support	.149		

* p<0.05 (2-tailed)

** p<0.01 (2-tailed)

*** p<0.001 (2-tailed).