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Longitudinal Effects of Social Support and Adaptive Coping on the Emotional Well-Being of Survivors of Localized Prostate Cancer

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Abstract

Survivors of prostate cancer experience treatment-related physical side effects that can compromise emotional well-being for years post treatment. There is limited research investigating how social support and the use of coping may affect the emotional well-being of this population following treatment. The aim of this study was to investigate how social support and coping impact emotional well-being 2 years after treatment in survivors of localized prostate cancer who have received either radical prostatectomy or radiotherapy. Psychosocial and disease-specific measures were administered to an ethnically and demographically diverse sample of 180 men treated for localized prostate cancer at baseline and at 2-year follow-up. Regression analyses demonstrated that higher levels of social support at baseline predicted better emotional well-being 2 years later. Furthermore, higher levels of adaptive coping at baseline partially mediated the relationship between social support and emotional well-being. Supportive relationships may contribute to improved emotional well-being following treatment by facilitating the use of adaptive coping strategies. Attention should be given to strengthening social support networks and educating survivors of prostate cancer on adaptive coping techniques.

An estimated 192,280 men were diagnosed with prostate cancer (PC) in the United States in 2009, adding to more than 2 million American men already living with PC.¹ For men diagnosed with localized PC, treatments such as radical prostatectomy and radiation therapy have proven highly effective, with 5-year survival rates approaching 100%.¹ However, the benefits of survival are often offset by the physical and psychological challenges created by diagnosis, treatment, and subsequent side effects of treatment. In particular, survivors often experience significant and chronic treatment-related physical side effects, such as urinary, sexual, and/or bowel dysfunction, for years following treatment.² These side effects have

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Conflicts of interest:
None to disclose

been demonstrated to compromise emotional well-being and impair overall quality of life up to 4 years post treatment.³⁻⁵ Some research suggests that psychosocial processes, including social support and the use of coping strategies, can act as a buffer, protecting survivors from experiencing the full brunt of cancer.⁶⁻⁸

Social Support and Emotional Well-Being

Perceived social support is associated with improved emotional well-being in cancer survivors. For example, perceptions of positive social support are associated with lower anxiety and depression as well as higher levels of emotional well-being, whereas a lack of social support is a significant predictor of declines in functional status in survivors of breast cancer (BC).^{6,9,10} However, research investigating the effects of social support on emotional well-being is not well documented in PC populations. Limited research suggests that men who cannot access emotional support from their social relationships are more likely to feel depressed and less likely to report positive overall psychological well-being.^{11,12} Furthermore, social support is associated with decreased psychological distress and increased overall quality of life in survivors of PC.¹³ However, the mechanisms through which social support may impact emotional well-being in this population over a longer survivorship period are not well understood.

One factor associated with emotional well-being in cancer survivors is the use of coping strategies to help manage the many psychological and physical challenges experienced. Coping generally involves the use of cognitive and/or behavioral efforts in many forms (eg, active or passive, informational, and emotional) to manage challenges. Coping has been associated with improved psychological function across multiple chronic conditions.¹⁴ In BC populations, use of coping strategies has been associated with enhanced physical health and decreased emotional distress immediately following treatment.¹⁵ Furthermore, the use of adaptive coping techniques, such as information seeking, problem-solving, seeking emotional and instrumental support, humor, and religion, was associated with reduced depression and anxiety and improved overall quality of life in a meta-analysis of the coping literature in survivors of PC.¹⁶ In contrast, the use of maladaptive coping strategies, such as denial, has been associated with increased depression and poorer overall well-being in survivors of PC.^{3,16}

However, there is some disagreement in the current literature as to the generalizability of this PC research to minority populations.¹⁶ Additionally, the extent to which social support may impact emotional well-being, via coping strategies, in survivors of PC remains to be determined.

The aims of this study were to address several gaps in our current understanding of the effects of social support and the use of coping strategies on emotional well-being in survivors of PC. First, to our knowledge, there is a notable lack of literature investigating the effects of these two psychosocial processes on emotional adjustment in survivors of localized PC, above and beyond the impact that disease-specific physical dysfunction (eg, sexual dysfunction) may already contribute. The majority of current social support studies evaluate either general cancer or BC populations. Second, much of the existing research investigating emotional well-being in localized PC populations does not follow survivors for an extended period following treatment, even though they continue to experience treatment-related physical dysfunction many years post treatment.¹⁷ Finally, there has been limited research conducted investigating the impact of social support and coping in diverse ethnic populations of survivors of PC.

Methods

PARTICIPANTS AND PROCEDURES

The 180 participants in the present study were men who were part of a parent study investigating the effects of a cognitive-behavioral stress management intervention for men treated for localized PC.¹⁸ They were recruited from the South Florida area through advertisements; referrals from urologists; and mailings through the Florida Cancer Data System, a registry of Florida cancer survivors maintained by the Florida Department of Health. Participants were required to be 50 years of age or older, have undergone treatment for localized PC within the past 18 months, and have a minimum of a ninth-grade reading level. Participants were excluded if they were on active hormone treatment, had a history of other cancers (excluding skin cancer), or had any significant cognitive impairment or active psychiatric symptoms that might interfere with their ability to participate in the study.

Participants who met the full eligibility criteria were enrolled in the study and signed an informed consent form approved by a university Institutional Review Board. All participants were administered a comprehensive psychosocial assessment battery in an interview format by research assistants. Participants were assessed at four time points (baseline, 3 months, 10 months, and 2 years post baseline). The information from the baseline assessment and the 2-year follow-up assessment was used for this present study.

MEASURES

Social support

The investigators of the Enhancing Recovery in Coronary Heart Disease (ENRICH) project developed the ENRICH Social Support Instrument (ESSI) as a measure of perceived availability of social support. The ESSI, a brief 7-item measure with good internal reliability, has been shown to correlate positively with other social support instruments.¹⁹ Participants are asked to report how closely statements describe their current situation from 1 (“none of the time”) to 5 (“all of the time”). Individual items in the ESSI are summed for a total score, with higher scores indicating greater levels of perceived social support. The reliability of the ESSI in this study was adequate (Cronbach’s $\alpha = 0.80$).

Adaptive coping

The 28-item Brief COPE was administered to assess the range of coping strategies used by an individual to deal with a stressful situation. The measure contains 14 total subscales, all with good internal reliability.²⁰ The participants in this study were asked to assess how they reacted to dealing specifically with PC by indicating the extent to which they have been using that particular coping strategy on a scale ranging from 1 (“I haven’t been doing this at all”) to 4 (“I’ve been doing this a lot”). The adaptive coping composite score was guided by factor analysis and has been previously utilized in PC populations.^{3,20} A meta-analytic review of coping in survivors of PC identified a set of adaptive coping strategies, which overlaps with the adaptive coping subscale used in this study.¹⁶ The adaptive coping score included the following subscale scores: active coping, venting, positive reframing, planning, humor, acceptance, and religion. The adaptive coping composite score demonstrated acceptable internal reliability in this study (Cronbach’s $\alpha = 0.75$).

Disease-specific physical function

To assess disease-specific physical function following treatment, a combined score from the Expanded PC Index Composite (EPIC) and the University of California–Los Angeles Prostate Cancer Index (UCLA–PCI) was used.^{21,22} The EPIC, a reliable PC-specific health-related instrument assessing urinary, bowel, and sexual function, was expanded from

the UCLA–PCI to capture concerns specific to common PC treatments. Both scales have been extensively used in PC populations.^{2,23} In the present sample, the EPIC was administered to participants treated with radiation, and the UCLA–PCI was administered to participants treated with surgery. For the purposes of this study, the items common to both scales were used to assess urinary, bowel, and sexual function for all participants. The three domain-specific scales all demonstrated adequate internal reliability in this study (Cronbach’s $\alpha = 0.71$ – 0.80).

Emotional well-being

The Functional Assessment of Cancer Therapy–General (FACT–G) module was used to assess quality of life in four domains: emotional, functional, physical, and social/family.²⁴ The 27-item questionnaire asked participants to indicate the degree to which each statement had been true for them over the past week on a scale from 1 (“not at all”) to 5 (“very much”). For the purposes of this study, the emotional well-being subscale, which consisted of six items assessing the extent of emotional adjustment to the survivor’s illness, was used. The FACT–G has demonstrated adequate validity in a number of studies in men with PC, and the emotional well-being subscale demonstrated acceptable internal reliability in this study (Cronbach’s $\alpha = 0.83$).²⁵

Results

In the present study, 180 survivors of localized PC were evaluated. All statistical analyses were conducted with SPSS Statistics software 16.0. Their full descriptive information can be seen in Table 1. To ensure that the study findings were not caused by sample attrition, we assessed whether there were any differences in any study variable between the current study sample and participants for whom we did not have 2-year follow-up data. Results of the independent samples *t*-test suggest that there were no statistically significant differences between the two groups ($P > 0.05$).

Our first aim was to examine the direct effect of social support, at baseline, on emotional well-being, at the 2-year follow-up. Because preliminary paired sample *t*-test analyses showed no significant changes in social support-, coping-, or treatment-related physical dysfunction over the course of the study ($P > 0.05$), baseline levels of these variables were used in all subsequent analyses. We considered a number of potential covariates with the outcome variable (emotional well-being) that could confound our results. Demographic, socioeconomic (age, ethnic group identification, income, years of education), and disease-related (treatment choice, months since diagnosis, months since treatment) variables were considered. Furthermore, as previous literature has identified a relationship between treatment-related side effects and emotional adjustment in survivors of PC, we also incorporated measures of disease-specific physical dysfunction in our analyses as possible confounding measures.

Results of Pearson zero-order correlations revealed that age, ethnic group identification, income, years of education, treatment choice, months since diagnosis, and months since treatment were not significantly related to study outcomes. However, we approached the analyses conservatively and included all potential covariates in our stepwise linear regression analyses. This approach allowed us to determine their relative contribution to emotional well-being and, thus, provide a more robust estimate of the influence of social support on emotional well-being. As expected, after controlling for demographic and disease-specific covariates; baseline levels of emotional well-being; and urinary, sexual, and bowel function, higher baseline levels of social support were significantly associated with higher emotional well-being 2 years post baseline ($\Delta R^2 = 0.17$, $P < 0.01$; $\beta = 0.15$, $P < 0.01$).

Our second aim of the study was to assess whether the use of adaptive coping mediated the relationship between social support and emotional well-being. Again, we included the demographic and disease-related covariates, as well as baseline levels of social support and urinary, sexual, and bowel function in our stepwise linear regression analyses. Following guidelines for mediation discussed by Baron and Kenny, we first demonstrated that emotional well-being was associated with social support ($\beta = 0.53, P < 0.001$).²⁶ Second, it was established that adaptive coping was associated with social support ($\beta = 0.36, P < 0.01$). However, the addition of adaptive coping to the regression of emotional well-being on social support did not create a nonsignificant relationship between social support and emotional well-being. Consequently, complete mediation was not indicated.

The Sobel test was employed to evaluate potential partial mediation effects.²⁷ Results from the Sobel test indicated that the relationship between social support and emotional well-being is partially mediated by the use of adaptive coping (Sobel test $z = -2.29, P < 0.05$). To minimize the family-wise type I error rate of our analyses, we conducted Holm tests.²⁸ The P values for our statistical tests were assessed against the total number of null hypotheses evaluated. Results indicate that we were unlikely to have incorrectly rejected a null hypothesis (type I error) in our analyses.

Post hoc analyses were conducted to evaluate the possibility that particular groups of men might be especially vulnerable to experiencing poor emotional adjustment to PC following treatment. Men were separated into quartiles according to their reported social support scores. Results from the independent samples t -test indicated that men achieving the highest levels of social support (> 31 on the ESSi) reported significantly higher emotional well-being (22.2 in the high support group vs 18.5 in the low support group; $P < 0.01$) than the men achieving the lowest levels of social support (< 20 on the ESSi). (Refer to Tables 2 and 3 for statistical information for the analyses completed in the present study.)

Discussion

Although localized PC has evolved into a manageable and highly survivable chronic illness, treatment-related side effects can significantly impact quality of life and emotional well-being. Social support and the use of coping strategies have been shown to buffer the negative side effects of the cancer experience, both psychologically and physiologically.^{6,9,16} However, much of the previous literature has examined the influence of these psychosocial processes in either general or BC-specific populations. Therefore, the benefits of coping skills in the post-treatment survivorship period for survivors of PC remain an area that has not been fully explored.¹⁶ Research suggests that examining psychosocial processes among survivors of PC is important, as the role of factors such as social support may differentially affect specific cancer populations in unique ways, given the distinct physical and psychological challenges associated with each type of cancer.⁷ Furthermore, in our review of the existing literature, we did not identify any previous work that has investigated the influence of psychosocial processes such as social support and coping on emotional well-being while concurrently considering the influence of treatment-related physical side effects such as sexual function.

Our findings demonstrated that social support is a significant, longitudinal predictor of emotional well-being in survivors of localized PC, above and beyond the effects of several relevant demographic and disease-specific variables, including treatment-related physical dysfunction. These novel findings are conceptually consistent with previous work in other cancer populations and point to the critical role that social support plays in emotional adjustment among survivors of PC following treatment.⁶ Post-hoc analyses revealed that men who perceived the lowest levels of social support reported emotional well-being scores

below national US general and cancer population norms.²⁹ This finding suggests that there may be subsets of survivors of PC who are isolated from their social environment and are, consequently, faced with a particularly difficult adjustment process following their cancer treatment.

Furthermore, adaptive coping partially mediated the relationship between social support and emotional well-being. This research provides evidence that helps to address several limitations identified in a meta-analysis examining the coping literature in survivors of PC.¹⁶ First, there are relatively few studies that have examined coping in survivors of PC. Second, many of these studies included patients who were undergoing treatment at the time and were primarily non-Hispanic white. Our study capitalized on a critical post-treatment period where survivors of PC continue to endure treatment-related side effects. Notably, our findings were independent of ethnic group membership in this ethnically diverse sample and thus suggested that both social support and coping can play key roles in promoting emotional well-being across several ethnic groups. Finally, much of the coping literature in PC populations employs cross-sectional designs. The present study was able to assess emotional adjustment in survivors of PC further into the post-treatment period than did much of the previous literature.

Although our findings are novel and highlight the importance of addressing coping strategies in the context of understanding the benefits exerted by social support on emotional well-being in this population, there are also limitations that must be acknowledged. Despite the challenges associated with PC diagnosis and treatment, some research has suggested that survivors of localized PC are able to return to pretreatment levels of emotional function up to 1 year post treatment.³⁰ However, in this previous work, follow-up assessments of emotional well-being do not extend beyond 1 year post treatment,²⁹ which may not capture the impact of physical side effects of treatment that can develop years post treatment.¹⁷ Additionally, although our measure of social support captured both emotional and tangible aspects of perceived social resources, other forms of social resources (eg, social integration, partner- or spousal-specific support) were not measured in the present study. Finally, although our study targets a critical post-treatment adjustment period, we did not assess the availability of social support or coping resources prior to treatment and therefore cannot determine the extent to which having adequate social resources and coping skills prior to treatment may relate to long-term adjustment in this population.

This study provides several clinical cancer care implications that can be drawn from our findings. First, social support is identified as an important target for any potential psychosocial work aimed at improving emotional outcomes, following treatment, in survivors of localized PC and their caregivers. This finding may be especially relevant to survivors who perceive low levels of support, as they may be experiencing the most significant challenges with emotional well-being. Second, adaptive coping strategies may be of benefit to survivors of PC, as our findings showed that the beneficial effects of social support on emotional adjustment are partially mediated by the use of adaptive coping skills. Our work also suggests that psychosocial interventions aimed at improving quality of life and emotional well-being during the post-treatment period should target coping skills training in addition to enhancing the use of efficacious social networks. Future work should also extend follow-up assessments further beyond the end of treatment to assess the longer term effects of these psychosocial processes in patients' emotional adjustment.

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Table 1

Demographic, Medical, and Psychosocial Characteristics for the Total Sample (n = 180)

	MEAN	SD
Age (years)	64.9	7.5
Education (years)	13.7	3.4
Income (\$K)	50.5	42.1
Months since diagnosis	15.4	6.2
Months since treatment	10.6	4.8
Social support (ESSI)	25.1	5.3
Adaptive coping (COPE)	53.8	11.5
Emotional well-being (FACT)	20.6	3.3
Treatment type	48%	
Radical prostatectomy	52%	
Radiotherapy		
Ethnicity	40%	
Non-Hispanic white	41%	
Hispanic	19%	
African-American		
Marital status	84%	
Married	16%	
Not married		

SD = standard deviation; ESSI = ENRICH Social Support Instrument; FACT = Functional Assessment of Cancer Therapy

Table 2

Hierarchical Regression Analyses to Predict Emotional Well-Being by Social Support Regression 1: Social support predicting emotional well-being

PREDICTOR	STANDARDIZED REGRESSION COEFFICIENT (β)	
	STEP 1	STEP 2
Block 1		
Baseline FACT-G	0.53**	0.42**
Emotional	0.10	0.11
Months since diagnosis	-0.18	-0.17
Months since treatment	0.04	0.04
Treatment choice	0.07*	0.05
Urinary function (EPIC)	0.00	0.00
Bowel function (EPIC)	0.01	0.01
Sexual function (EPIC)	-0.04	-0.05
Age	0.00	0.00
Income	-0.06	-0.03
Years of education	0.09	0.07
Ethnicity		
Block 2		
ESSI social support		0.19**

FACT-G = Functional Assessment of Cancer Therapy-General; EPIC = Expanded Prostate Cancer Index Composite; ESSI = ENRICHD Social Support Instrument

* $p < 0.05$

** $p < 0.01$

Table 3

Hierarchical Regression Analyses to Predict Emotional Well-Being by Social Support, Partially Mediated by Adaptive Coping Regression 2: Social support and adaptive coping predicting emotional well-being

PREDICTOR	STANDARDIZED REGRESSION COEFFICIENT (β)	
	STEP 1	STEP 2
Block 1		
Baseline FACT-G	0.42**	0.36**
Emotional		
Months since diagnosis	0.15	0.15
Months since treatment	-0.11	-0.10
Treatment choice	0.06	0.04
Urinary function (EPIC)	0.08	0.10
Bowel function (EPIC)	-0.04	-0.04
Sexual function (EPIC)	0.14*	0.13*
Age	-0.04	0.05
Income	0.08	0.06
Years of education	-0.05	-0.05
Ethnicity	0.08	0.08
Block 2		
ESSI social support		0.14*
COPE adaptive coping		0.10*

FACT-G = Functional Assessment of Cancer Therapy-General; EPIC = Expanded Prostate Cancer Index Composite; ESSI = ENRICH Social Support Instrument

* $p < 0.05$

** $p < 0.01$