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Title

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Permalink

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Journal

Psycho-Oncology, 28(3)

ISSN

1057-9249

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Publication Date


2019-03-01

DOI

10.1002/pon.4964

Peer reviewed

Efficacy of problem-solving therapy for spouses of men with prostate cancer: A randomized controlled trial

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Funding information

California Cancer Research Program, Grant/Award Number: 99-00556V-10049; National Cancer Institute, Grant/Award Numbers: P30 CA 23100 and R25 CA 65745; Rebecca and John Moores UCSD Cancer Center Foundation

Abstract

Objective: Prostate cancer can have a significant negative impact on patients and their spouses. Problem-solving therapy (PST) has been shown to help reduce distress and improve quality of life among cancer and caregiver populations. This study tested the efficacy of PST for spouses of men with prostate cancer.

Methods: Spouses of men diagnosed with prostate cancer within the past 18 months (N = 164) were randomly assigned to PST (n = 78) or usual psychosocial care (UPC; n = 86). Spouses completed measures of constructive and dysfunctional problem solving, cancer-related distress, mood, physical and mental health, and dyadic adjustment at preintervention and post-intervention and 3-month post-intervention follow-up.

Results: Constructive problem solving increased from pre-intervention to post-intervention among spouses receiving PST but not for spouses receiving UPC; this was maintained at follow-up. There was no decrease in dysfunctional problem solving. Spouses receiving PST versus UPC reported less cancer-related distress post-intervention and at follow-up. There were no significant changes in mood or physical and mental health. Dyadic adjustment was significantly better for spouses receiving PST versus UPC at post-intervention but not at follow-up. Improvements in constructive problem solving mediated better mood and dyadic adjustment post-intervention.

Conclusions: Results support the efficacy of PST for improving spouses' constructive problem solving. There was evidence of both direct and mediated positive effects of PST for both individual and dyadic adjustment. PST may be useful for improving individual and dyadic outcomes for spouses of men with prostate cancer.

KEYWORDS

dyadic adjustment, health-related quality of life, problem-solving therapy, prostate cancer, psychosocial oncology, spousal caregivers

1 | BACKGROUND

1.1 | Prostate cancer and spousal caregivers

Spouses of men with prostate cancer often bear the caregiving burden. Studies have found that spouses of men with prostate cancer are more distressed than the patients,¹ and sources of distress are

from psychosocial factors more than from medical sequelae.² Spouses of men with prostate cancer struggle with balancing their needs with those of the patient,³ especially because they tend to have active involvement in the patient's treatment.¹ The relationship between spouse and patient distress unfolds over time and is influenced by contextual factors,⁴ but, in general, studies have found that spouse distress is positively related to patient distress^{5,6} and negatively

related to patient physical health.⁷ Negative psychological effects are often long-term, ranging from 6 months^{8,9} to 3 years posttreatment.⁹ Long-term caregivers who are stressed are likely to also report physical ailments.⁷

In recent years, attention has been given to providing support for spousal caregivers of adult cancer patients. A meta-analysis of randomized trials of psychosocial interventions for family caregivers of adult cancer patients found that the interventions improved caregivers' active coping (eg, problem solving) and decreased more ineffective approaches such as avoidance and denial.¹⁰ Caregivers reported decreases in caregiving burden, distress, and anxiety, and improved physical functioning. Similarly, another review found that female caregivers derived more benefit from psychosocial interventions, especially those focused on communication and/or education.¹¹ Another review showed that psychosocial interventions can facilitate improvements in both patients with all types of cancer and their spousal caregivers.¹²

A review of psychosocial interventions specifically designed for partners of men with prostate cancer identified 11 relevant studies; all but one examined dyadic interventions.¹³ Interventions that require the involvement of both patient and spouse have advantages, but may present barriers, including that patients may be too ill to participate, or spouses may not feel able to share freely or address their own needs. In the single study of an intervention designed for spouses,¹⁴ researchers randomized spouses of men with prostate cancer to either a 6-week psychoeducational group or usual psychosocial care (UPC). At 1-month post-intervention, spouses in the psychoeducational group reported more positive reframing, higher personal growth, and lower denial compared with those who received usual care.

1.2 | Problem-solving therapy

Problem-solving therapy (PST) teaches skills and a strategic approach that promotes a positive and constructive orientation to coping with problems. The process involves problem identification, generating and selecting among coping strategies, and implementing and evaluating solutions.¹⁵ The focus is not on which particular coping strategies are chosen, but rather on the process of choosing, implementing, and evaluating the efficacy of the strategies. PST can be delivered individually, in dyads, or in groups, and has been adapted for many populations, including cancer patients. Studies provide general support for the efficacy of PST interventions for quality of life in cancer patients and survivors,¹⁶⁻¹⁹ and suggest that changes in problem solving (PS) are the essential mechanism underlying the success of the intervention.¹⁹

Spousal PS has been shown to mediate the relationship between patient and spouse distress.^{5,6,20} One study found that spouses' dysfunctional PS skills mediated the relationship of spouse to patient distress⁶ while another showed that, within couples, partners' positive problem orientation was inversely related to partners' and patients' depression.²⁰ However, to date, no one has examined the efficacy of PST designed for spouses of men with prostate cancer. In this study, we hypothesized that spouses receiving a PST intervention, versus UPC, would show a decrease in their cancer-related distress (primary

outcome). We also hypothesized that spouses would show improvements in mood, health-related quality of life (physical/mental), and dyadic adjustment (secondary outcomes). We hypothesized that the changes in the individual and dyadic outcomes would be mediated by the changes in spousal PS (mediators).

2 | METHODS

2.1 | Participants

Men diagnosed with prostate cancer and their spouses/partners¹ were eligible to participate if: (a) the patient had been diagnosed with prostate cancer within 18 months; (b) they were currently cohabitating; (c) they lived in or near San Diego County; and (d) they both had English language proficiency. Participants were excluded if (a) the patient or spouse had a known psychiatric condition that interfered with their ability to complete assessments or participate in therapy, or (b) either member of the dyad refused to participate.

One hundred and seventy-two couples were formally assessed for eligibility (see Figure 1). Three were excluded for not meeting inclusion criteria. Following baseline data collection and randomization, five of the couples refused their randomization assignment (four intervention, one control) and were excluded from further analyses. Couples who refused randomization did not significantly differ from the final sample on sociodemographic and medical characteristics, or on the outcome measures. Of the remaining 164 couples, 78 were randomized to the experimental group and 86 to the control group.

2.2 | Procedures

This randomized controlled trial was approved by the Institutional Review Boards of both collaborating universities (joint IRB #031085) and was registered in ClinicalTrials.gov (NCT02085096). Physicians at the collaborating cancer and community centers contacted their patients through personal letters, flyers, and phone calls. In addition, recruitment was conducted through one-to-one and public appeals via distribution of flyers and announcements in print and electronic media. For patients or spouses who called and appeared to meet inclusion criteria, an appointment was scheduled with both members of the couple to confirm eligibility. After eligibility was determined, couples were consented and completed the baseline assessment (Time 1). Then, couples were randomized to either PST or UPC. Randomization was determined using a random numbers table generated by the project statistician. Follow-up assessments were conducted immediately post-intervention (Time 2; approximately 2-3 months postbaseline) and 3 months post-intervention (Time 3; approximately 6 months postbaseline). Couples were reimbursed \$150 for their participation.

2.3 | Intervention

2.3.1 | PST

The intervention was adapted from Varni and Sahler et al's Bright IDEAS Problem-Solving Skills training program for maternal caregivers

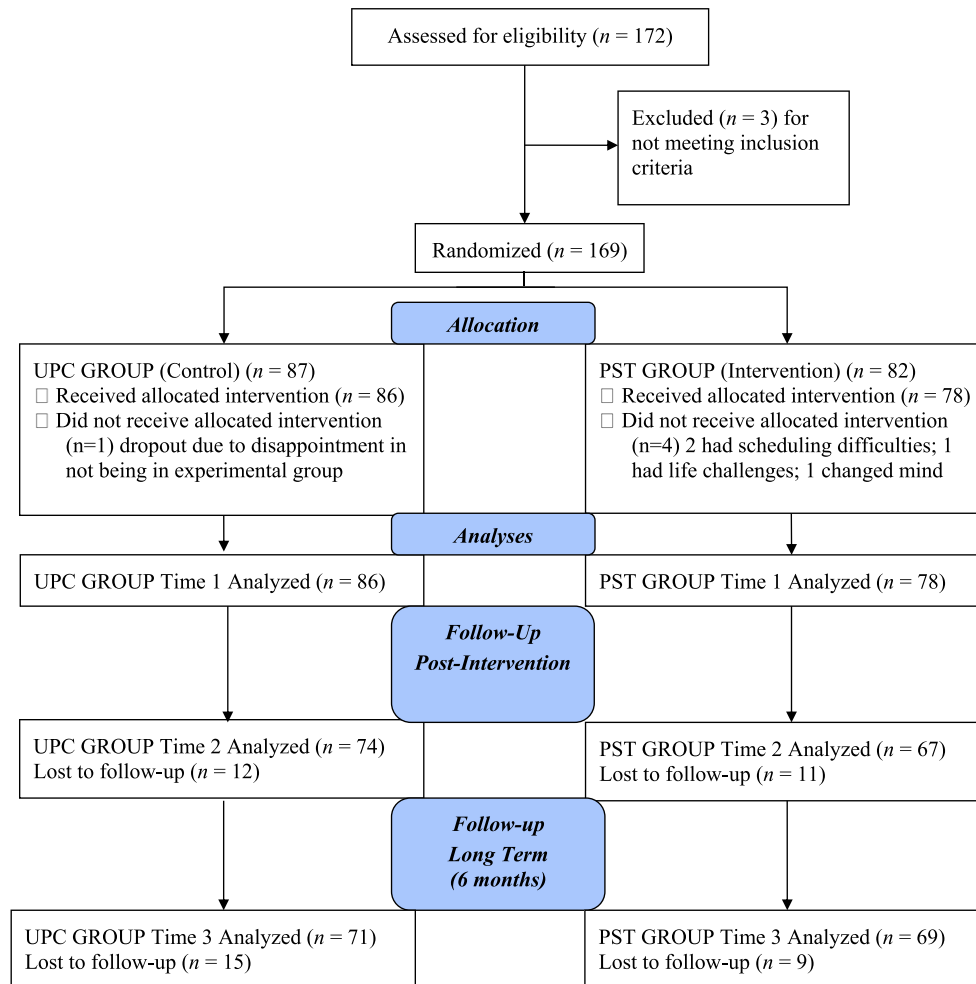


FIGURE 1 Flow diagram of recruitment and retention

of pediatric cancer patients^{21,22} and Nezu et al's PST manual for distressed adult cancer patients.^{19,23} The intervention was six to eight sessions in length and delivered by trained staff in participants' homes. Staff were trained by the senior author of the Bright IDEAS Problem-Solving Skills training program and a senior collaborator from Nezu's PST Project Genesis team. Offering a variable number of sessions allowed for flexibility in scheduling and completing therapy; however, the number of sessions did not create variations in intervention content or intensity.

In the first session, the therapist met with the spouse to build rapport, provide an overview, and introduce the PST approach. In the second session, positive problem orientation (ie, "Bright") and the five key component PS skills of the Bright IDEAS model (Identify [ie, clearly delineate] the problem; Define your options [ie, develop alternative strategies] for solving the problem; Evaluate the options, and choose the best one to enact; Act to implement the option chosen; and See if it worked [ie, evaluate the outcome]) were introduced. After being taught the five skills, spouses applied them to sample problem situations that were representative of challenges reported by spouses of prostate cancer patients in a previous study.^{24,25} In the remaining sessions (three to eight), therapists and spouses worked together to practice the skills, applying them to actual prostate cancer-related problems identified by each spouse.

Homework included worksheets and focused on implementation of PS skills to solve problems identified by spouses.

2.3.2 | Usual psychosocial care

After completing the baseline assessment and being randomized, spouses assigned to UPC were simply encouraged to engage in any supportive care services available to them from their usual sources (eg, health care team members, family and friends, therapists, and support groups). There was no further contact from the research team until the Time 2 assessment.

2.3.3 | Treatment integrity

To assess treatment integrity, the second session of the PST intervention was recorded. This was the session in which all elements of PST were introduced. Twenty percent¹⁴ of the recordings were randomly selected and rated on a 10-element treatment integrity checklist. In 11 of the 14 reviewed sessions (79%), all 10 elements were covered. For two sessions, nine of the 10 elements were covered; and in one session, eight elements were covered. Missed elements during the second session included failure to (a) identify the five words represented in the Bright IDEAS acronym (two cases); (b) distinguish

between problem- and emotion-focused approaches (one case), and (c) review implementation strategies (one case). Fifty percent (7/14) of the recordings were rated by two project staff; inter-rater reliability exceeded 90%.

2.4 | Measures

2.4.1 | Problem solving

Social Problem-Solving Inventory-Revised (SPSI-R)²⁶

The SPSI-R is a 52-item self-report instrument that yields scores for two general PS styles: Constructive problem solving (CPS; consists of positive problem orientation and rational PS subscales) and dysfunctional problem solving (DPS; consists of negative problem orientation, impulsivity/carelessness style, and avoidance style subscales). In adult cancer patients, less effective PS, has been associated with higher levels of depressive and anxiety symptoms, as well as greater numbers of cancer-related problems.²⁷ Cronbach's alphas for the present sample were 0.86 (CPS) and 0.88 (DPS).

2.4.2 | Primary outcome

Impact of Events Scale-Revised (IES-R)²⁸

The IES-R was used to measure cancer-related distress. It is a 22-item self-report measure that assesses subjective distress caused by a specific traumatic event identified by the respondent (in this case, the husband's prostate cancer). The IES-R yields a total score with higher scores indicating more cancer-related distress. Cronbach's alpha was 0.95.

2.4.3 | Secondary outcomes

Profile of mood states (POMS)²⁹

The POMS is a 65-item five-point adjective rating scale that yields a total mood disturbance score, with higher scores indicating worse mood. The POMS has well-documented reliability and validity in patients with prostate cancer³⁰ and spouses of cancer patients.³¹ Cronbach's alpha was 0.83.

Medical outcomes study short-form health survey (SF-36)³²

The SF-36 is a widely utilized generic health-related quality of life instrument with excellent reliability and validity.³² The SF-36 contains 36 items and yields two summary scales: Physical Health (PH) and Mental Health (MH).³³ Higher scores reflect better health. Cronbach's alphas were .92 (PH) and .85 (MH).

Dyadic adjustment scale (DAS)³⁴

The DAS is a 32-item scale that yields a total score reflecting the quality of romantic relationships in cohabitating couples. Higher values indicate better relationship functioning. This instrument has been shown to be reliable and valid for cancer populations.³⁵ Cronbach's alpha was 0.94.

2.4.4 | Sociodemographic and medical characteristics

Information on sociodemographic characteristics was obtained via self-report. Medical characteristics were obtained from patients' physicians.

2.5 | Data analyses

2.5.1 | Sample size and power

Sample size requirements were based on planned analysis for the hypothesis that the intervention would significantly improve spousal HRQOL. Assuming a medium effect size ($d = 0.5$) and $p < 0.05$, with a sample of at least 140, this study's power to detect a group difference exceeded 0.90.

2.5.2 | Statistical methods

Descriptive statistics were calculated for all measures and compared with available national norms. Scores were tested for skewness and kurtosis. Scores that were skewed were transformed using log transformations. Analyses were conducted on both the nontransformed and transformed variables. To test whether PST, versus UPC, positively impacted PS and individual and dyadic adjustment, we computed change scores (baseline to post-intervention, and baseline to follow-up) for: PS (constructive and dysfunctional), IES-R, POMS, SF-36 PH, and MH, and DAS by subtracting Time 2 and Time 3 from baseline scores. We then conducted 2-tailed t-tests with family-wise alpha of $P < 0.05$ to determine significant changes between the PST and UPC groups. SPSS 24.0 and EQS were used to analyze the data.

To test whether changes in CPS or DPS mediated the effect of the PST intervention on changes in the outcomes, we followed the recommendations of Shrout and Bolger.³⁶ Both the direct effect from the target antecedent variable (PST/UPC) to the target outcome (Time 2 and Time 3 individual and dyadic outcome variables) and the indirect (or mediated) effect via the hypothesized Time 2 mediators (CPS and DPS scores) were simultaneously tested. In all models, Time 2 and 3 outcome variables were examined after controlling for Time 1 variables for the target outcome variables and mediator variables, respectively. MacKinnon's asymmetric confidence interval was calculated to determine if the mediated effect was statistically significant.³⁷ A mediated effect is supported if the confidence interval does not contain 0, which suggests that treatment group significantly influences the mediator, which, in turn, influences the outcome.

3 | RESULTS

3.1 | Sample description

Spouses' ages ranged from 32-86 years ($M = 61.54$ years, $SD = 10.72$). Participants self-identified as White (82%), African-American (5.5%), Latino (5.5%), Asian (5%), or other (2%). Most were well educated (6.7% some high school, 19.5% high school graduate, 33.5% some college, 17.7% college graduate, 22.6% graduate or professional

school). Participants' incomes were: 28% higher than \$75,000; 22% \$50,001-\$75,000; 25% \$30,001-\$50,000; 17.7% \$30,000, and under; 7.3% did not report. Over half reported being retired (57%), 24% reported working full-time, 15% reported working part-time, and 4% reported looking for a job. Patients' diagnoses were: Stage 1 (49%), Stage 2 (27%), Stage 3 (10%), and Stage 4 (4%); 10% were not confirmed. Mean latency since diagnosis was 5.26 months (SD = 4.53). Patients reported getting one or more of the following treatments: radical prostatectomy (56), radiation(28), orchiectomy(6), Lupron/Zoladex shots (53), and Flutamide.(20)

Descriptive statistics, available norms, and effect sizes for all mediator (SPSI-R) and outcome variables (IES-R, POMS, SF-36 PH, and MH, DAS) are shown in Table 1. At baseline, there were no significant differences between the PST and UPC groups on any variables. Because there were no differences in significant findings from analyses conducted on transformed versus nontransformed variables, the results of the nontransformed variables are reported for ease of interpretation.

3.2 | Constructive and dysfunctional problem solving

CPS improved significantly more for PST than UPC from T1 to T2 ($t(1162) = 2.48, P = 0.014$; and T1 to T3 ($t(1162) = 2.03, P = 0.044$). DPS change scores did not differ between groups. See Table 2.

3.3 | Primary outcome

The decrease in cancer-related distress (IES-R) was significantly greater for PST than the UPC group, both from T1 to T2, $t(1145) = 4.12, P = 0.044$; and from T1 to Time 3, $t(1146) = 4.67, P = 0.032$.

3.4 | Secondary outcomes

There were no statistically significant differences between the two groups on change scores for mood (POMS) or for PH or MH (SF-36). Improvement in DAS was significantly greater for the PST than the

UPC group from T1 to T2, $t(1162) = 1.98, P = 0.049$. The groups did not significantly differ on DAS change scores from T1 to T3.

3.5 | Mediated effects

For Time 2 analyses, path coefficients found to be significant for the mediational analyses are presented by outcome variable (POMS, DAS) in Figure 2. There were no significant path coefficients for IES-R or for SF-36 PH and MH. Participation in PST (versus UPC) was associated with greater use of CPS, the mediator variable. Use of CPS was significantly negatively associated with POMS score and significantly positively associated with DAS score. The target mediated effect was statistically significant for POMS (95% asymmetric CI ranged from -2.68 to -0.02) and DAS (95% asymmetric CI ranged from -1.05 to -0.02). The more that participants engaged in constructive PS, the lower their mood disturbance, and the more satisfied they were with their marriage.

For Time 3 analyses, there were no significant mediational effects of CPS on any of the outcome variables. For all models, there was also no direct effect from the intervention/control group variable to any of the outcome variables. DPS was not a significant mediator in any path analysis at either time point.

4 | DISCUSSION

The present study examined whether a PST intervention directly focused on the challenges faced by spouses of men with prostate cancer would be efficacious in improving spouses' PS skills and positively affecting cancer-related distress, mood, physical/mental HRQOL, and dyadic adjustment. In sum, results showed that PST, versus UPC, improved constructive PS, but did not reduce dysfunctional PS. Receiving PST directly led to spouses experiencing reductions in cancer-related distress and improvement in dyadic adjustment post-intervention, but no changes in mood disturbance or in general physical/mental HRQOL. The reductions in cancer-related distress were maintained several months post-intervention, although the improvements in dyadic adjustment were not. Finally, improvements

TABLE 1 Mean scores (M) and standard deviations (SD) with available normative data

Measure	Time 1				Time 2			Time 3		
	Norms	PST	UPC	d	PST	UPC	d	PST	UPC	d
SPSI-R CPS ^a		59.1 (16.4)	63.4 (15.0)		62.2 (18.2)	61.4 (15.9)		61.2 (15.6)	61.1 (15.3)	
SPSI-R DPS ^a		23.7 (13.0)	25.9 (16.5)		21.2 (13.4)	23.4 (15.2)		22.6 (13.6)	24.4 (15.8)	
IES-R	23.17 (17.8)	18.9 (17.0)	19.3 (17.4)	-0.02	12.2 (12.2)	15.6 (15.9)	-0.24	10.6 (12.9)	13.9 (16.2)	-0.23
POMS	33.4 (37.1)	27.8 (38.8)	25.5 (36.1)	0.06	15.1 (35.0)	19.9 (38.2)	-0.13	18.1 (38.0)	17.8 (37.4)	0.01
SF-36 PH ^a	50 (10)	49.3 (12.6)	51.5 (11.8)	-0.18	46.4 (12.5)	49.4 (10.7)	-0.26	47.4 (12.4)	48.0 (12.0)	-0.05
SF-36 MH ^a	50 (10)	45.3 (13.2)	42.9 (15.3)	0.17	50.4 (11.7)	45.4 (16.0)	0.35	49.1 (13.1)	46.2 (15.8)	0.20
DAS ^a	114.8 (17.2)	118.5 (16.7)	118.7 (17.0)	-0.01	120.1 (15.8)	117.5 (18.3)	0.14	117.6 (18.0)	116.4 (19.7)	0.06

Abbreviations: DAS, dyadic adjustment scale; IES-R, impact of events scale-revised; POMS, profile of mood states; PST, problem-solving therapy (intervention group); SF-36 MH, medical outcomes study short-form health survey mental health; SF-36 PH, medical outcomes study short-form health survey physical health; SPSI-R CPS, social problem-solving inventory-revised constructive problem solving; SPSI-R DPS, social problem solving inventory-revised dysfunctional problem solving; UPC, usual psychosocial care (control group). d = effect sizes.

^aHigher scores indicate healthier functioning for SPSI-R, SF-36, DAS, and scores. For all other variables, lower scores indicate healthier functioning.

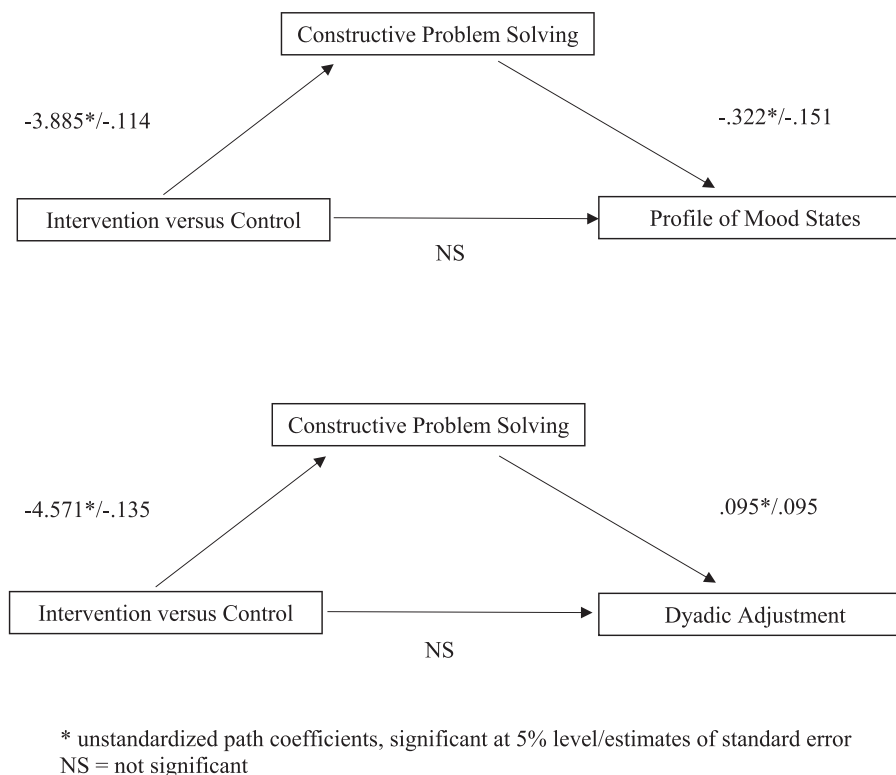
TABLE 2 Comparison of mean change scores by treatment condition from Time 1 to Time 2, and Time 1 to Time 3^a

Measure	Time 2-Time 1					Time 3-Time 1				
	PST	d	UPC	d	p	PST	d	UPC	d	p
SPSI-R CPS ^b	3.05	0.31	-1.99	-0.25	0.014	2.10	0.23	-2.29	-0.26	0.044
SPSI-R DPS ^b	-2.52	-0.35	-2.50	-0.32	NS	-1.04	-0.13	-1.49	-0.23	NS
IES-R	-6.7	-0.77	-3.7	-0.25	0.044	-8.3	-0.99	-5.4	-0.34	0.032
POMS	-12.31	-0.57	-5.58	-0.27	NS	-9.60	-0.34	-7.60	-0.42	NS
SF-36 PH ^b	-2.24	-0.40	-2.09	-0.40	NS	-1.57	-0.31	-3.35	-0.69	NS
SF-36 MH ^b	4.34	0.54	2.56	0.34	NS	3.39	0.34	3.61	0.49	NS
DAS ^b	1.27	0.21	-1.41	-0.25	0.049	-1.22	-0.17	-1.82	-0.27	NS

Abbreviations: DAS, dyadic adjustment scale; IES-R, impact of events scale-revised; POMS, profile of mood states; PST, problem-solving therapy (intervention group); SF-36 MH, medical outcomes study short-form health survey mental health; SF-36 PH, medical outcomes study short-form health survey physical health; SPSI-R CPS, social problem-solving inventory-revised constructive problem solving; SPSI-R DPS, social problem solving inventory-revised dysfunctional problem solving; UPC, usual psychosocial care (control group). d = effect sizes, P = significance at <0.05.

^aWe conducted the same analyses on the transformed variables with no changes in results.

^bHigher scores indicate healthier functioning for SPSI-R, SF-36, DAS scores. For all other variables, lower scores indicate healthier functioning.

**FIGURE 2** Constructive problem solving mediates treatment effects (intervention versus control) for both profile of mood states and dyadic adjustment

in constructive PS were associated with better mood and dyadic adjustment post-intervention.

That PST positively impacted constructive, but not dysfunctional, PS was not surprising, given that the intervention that was delivered focused heavily on teaching constructive approaches. While dysfunctional PS might be indirectly decreased through an intervention that focuses on the promotion of constructive skills and strategies, the PST intervention that was employed here was not designed to directly address, or suppress, these dysfunctional approaches. It is possible that a longer and more in-depth PST intervention addressing individual dysfunctional coping would have a stronger impact on HRQOL outcomes.

And changing CPS mattered. Mediation analysis supported that PST improved constructive PS, which in turn decreased mood disturbance and improved perceptions of relationship quality. Interestingly, PST, versus UPC, also resulted in decreases in cancer-related distress for spouses, but this appeared to be a direct result of the intervention, rather than an effect mediated by changes in constructive PS. Decreased distress may have resulted from nonspecific therapeutic factors associated with PST, such as therapist attention and support. It is also possible that the PST group's decrease in cancer-related distress was because of exposure, ie, the more the spouses talked about and directly addressed their cancer-related trauma in therapy sessions, the less distressed they felt.

Spouses received six to eight individual sessions of PST in their homes, focused on problems directly related to the prostate cancer experience, and delivered at no cost by trained graduate-level therapists. Common barriers to seeking help such as transportation and financial restrictions were addressed by delivering the intervention this way. A key element of the PST intervention was that it was designed to be only offered to the spouses. We anticipated providing PST to spouses of men with prostate cancer could simultaneously reduce their own distress and strengthen their ability to fulfill a supportive, caregiving role for the patients. This followed the model of the PST intervention tested by Sahler et al (2005), where PST was provided to parents of children with cancer.

We also anticipated that the patients with prostate cancer might be less interested, available, or sufficiently healthy to take part in PST. However, a number of expressed interest in the intervention and asked whether it could also be provided to them, or if they could join their spouses in receiving the intervention. Future studies should evaluate the effects of PST interventions offered to the couple facing prostate cancer. Also, the intervention was delivered in a one-to-one format. Individual interventions, especially ones that are essentially home-based, can be very expensive and not sustainable. This format, although helping to overcome some barriers to seeking therapy, may not have allowed the women the opportunity to experience the supportive environment available in a group therapy setting. Another potential future application of this intervention would be via psychoeducational groups in health care (eg, oncology and primary care) settings, where spouses can learn from the facilitator and each other, and provide mutual support.

5 | STUDY LIMITATIONS

Study limitations included limited generalizability due to a volunteer sample that was mostly White, higher SES, and heterosexual. Both members of the dyad had to agree to participate in the study, even though only the spouses received the intervention; this may have led to the exclusion of spouses who might have benefited from the intervention because patients were not interested, or because there was not a common understanding or appreciation of the spouses' needs. Most spouses who participated were not highly distressed and had relatively stable marriages, and therefore it is unclear how well PST would work for spouses with more negative individual and/or dyadic adjustment challenges. Future research is needed to determine whether a PST intervention could be even more valuable for those spouses who report being distressed; as research has shown, these spouses have higher levels of anxiety and depression and reduced coping skills.³⁸

6 | CLINICAL IMPLICATIONS

PST shows promise as a psychosocial intervention for spouses. The manualized PST intervention is practical, problem-focused, and able to be adapted to each spouse's individual cancer-related challenges. Attrition was low, indicating that this was an acceptable intervention. In addition, PST can be delivered by a variety of health-care

practitioners with appropriate training. Although the present study evaluated a more traditional, individually focused approach over several weeks, PST has been delivered to dyads and in groups, and in briefer and computer-based formats^{39,40} that may be more amenable to cancer patients and their spouses who are managing many demands on their time and energy.

7 | CONCLUSIONS

The results of this randomized controlled trial support PST as an intervention that can lead to improvements in problem solving and in both individual and dyadic outcomes for spouses of men with prostate cancer. Future studies are needed to address the applicability and efficiency of PST for spouses of cancer patients in various settings (eg, in-home, therapeutic practice, and health care setting), delivered via various formats (eg, individual, group, dyadic, and brief), and for different types of cancer.

ACKNOWLEDGEMENTS

This study was supported by the Rebecca and John Moores UCSD Cancer Center Foundation, the California Cancer Research Program (CCRP) grant 99-00556 V-10049, the National Cancer Institute (NCI) grant R25 CA 65745, and the NCI grant P30 CA 23100. We would like to thank Dr. James Varni for his contribution to this project. We would like to thank Dr. Stephanie Felgoise for providing us with training.

CONFLICTS OF INTEREST

The authors have no conflict of interests to declare.

ENDNOTE

¹ Almost all were married; those who were not were long-term cohabitating partners. We chose to use the term "spouse" throughout to reflect the long-term committed relationship of these dyads.

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REFERENCES

- Couper J, Bloch S, Love A, MacVean M, Duchesne GM, Kissane D. Psychosocial adjustment of female partners of men with prostate cancer: a review of the literature. *Psychooncology*. 2006;15(11):937-953.
- Eton DT, Lepore SJ, Helgeson VS. Psychological distress in spouses of men treated for early-stage prostate carcinoma. *Cancer*. 2005;103(11):2412-2418.
- Ervik B, Nordøy T, Asplund K. In the middle and on the sideline: the experience of spouses of men with prostate cancer. *Cancer Nurs*. 2013;36(3):E7-E14.
- Song L, Northouse LL, Braun TM, et al. Assessing longitudinal quality of life in prostate cancer patients and their spouses: a multilevel modeling approach. *Qual Life Res*. 2011;20(3):371-381.
- Banitha R, Malcarne VL, Varni JW, Ko CM, Sadler GR, Greenbergs HL. The effects of dyadic strength and coping styles on psychological distress in couples faced with prostate cancer. *J Beh Med*. 2003;26(1):31-52.

6. Ko CM, Malcarne VL, Varni JW, et al. Problem-solving and distress in prostate cancer patients and their spousal caregivers. *Support Care Cancer*. 2005;13(6):367-374.
7. Kim Y, Given BA. Quality of life of family caregivers of cancer survivors. *Cancer*. 2008;112(S11):2556-2568.
8. Couper J, Bloch S, Love A, Duchesne G, MacVean M, Kissane D. Coping patterns and psychosocial distress in female partners of prostate cancer patients. *Psychosomatics*. 2009;50(4):375-382.
9. Harden JK, Sanda MG, Wei JT, et al. Partners' long-term appraisal of their caregiving experience, marital satisfaction, sexual satisfaction, and quality of life 2 years after prostate cancer treatment. *Cancer Nurs*. 2013;36(2):104-113.
10. Northouse LL, Katapodi MC, Song L, Zhang L, Mood DW. Interventions with family caregivers of cancer patients: meta-analysis of randomized trials. *CA-Cancer J Clin*. 2010;60(5):317-339.
11. Waldron EA, Janke EA, Bechtel CF, Ramirez M, Cohen A. A systematic review of psychosocial interventions to improve cancer caregiver quality of life. *Psychooncology*. 2013;22(6):1200-1207.
12. Baik OM, Adams KB. Improving the well-being of couples facing cancer: a review of couples-based psychosocial interventions. *J Mar Fam Ther*. 2011;37(2):250-266.
13. Wootten A, Abbott J, Farrell A, Austin D, Klein B. Psychosocial interventions to support partners of men with prostate cancer: a systematic and critical review of the literature. *J Cancer Surviv*. 2014;8(3):472-484.
14. Manne S, Babb J, Pinover W, Horwitz E, Ebbert J. Psychoeducational group intervention for wives of men with prostate cancer. *Psychooncology*. 2004;13(1):37-46.
15. D'Zurilla TJ, Nezu AM. *Problem-solving therapy: a social competence approach to clinical intervention*. New York, NY: Springer Publishing Company; 1999.
16. Allen SM, Shah AC, Nezu AM, et al. A problem-solving approach to stress reduction among younger women with breast carcinoma. *Cancer*. 2002;94(12):3089-3100.
17. Hegel MT, Lyons KD, Hull JG, et al. Feasibility study of a randomized controlled trial of a telephone-delivered problem-solving—occupational therapy intervention to reduce participation restrictions in rural breast cancer survivors undergoing chemotherapy. *Psychooncology*. 2011;20(10):1092-1101.
18. Hopko D, Funderburk J, Shorey R, et al. Behavioral activation and problem-solving therapy for depressed breast cancer patients: preliminary support for decreased suicidal ideation. *Beh Mod*. 2013;37(6):747-767.
19. Nezu AM, Nezu CM, Felgoise SH, McClure KS, Houts PS. Project genesis: assessing the efficacy of problem-solving therapy for distressed adult cancer patients. *J Consult Clin Psych*. 2003;71(6):1036-1048.
20. McClure KS, Nezu AM, Nezu CM, O'Hea EL, McMahon C. Social problem solving and depression in couples coping with cancer. *Psychooncology*. 2012;21(1):11-19.
21. Sahler OJZ, Fairclough DL, Phipps S, et al. Using problem-solving skills training to reduce negative affectivity in mothers of children with newly diagnosed cancer: report of a multisite randomized trial. *J Consult Clin Psych*. 2005;73(2):272-283.
22. Varni JW, Sahler OJ, Katz ER, et al. Maternal problem-solving therapy in pediatric cancer. *J Psychosoc Oncol*. 1999;16(3-4):41-71.
23. Nezu AM, Nezu CM, Friedman SH, Faddis S, Houts PS. *Helping cancer patients cope: a problem-solving approach*. Washington, D.C.: American Psychological Association; 1998.
24. Jacobs JR, Banthia R, Sadler GR, et al. Problems associated with prostate cancer: differences of opinion among health care providers, patients, and spouses. *J Cancer Educ*. 2002;17(1):33-36.
25. Malcarne VL, Banthia R, Varni JW, Sadler GR, Greenbergs HL, Ko CM. Problem-solving skills and emotional distress in spouses of men with prostate cancer. *J Cancer Educ*. 2002;17(3):150-154.
26. D'Zurilla TJ, Nezu AM, Maydeu-Olivares A. *Manual for the Social Problem-Solving Inventory-Revised*. North Tonawanda, NY: Multi-Health Systems; 2002.
27. Nezu CM, Nezu AM, Friedman SH, et al. Cancer and psychological distress: two investigations regarding the role of social problem-solving. *J Psychosoc Oncol*. 1999;16(3-4):27-40.
28. Weiss D. Psychometric review of the impact of events scale-revised. In: Stamm H, ed. *Measurement of Stress, Trauma, and Adaptation*. Brooklandville, MD: Sidran Institute Press; 1996:186-187.
29. McNair DM, Droppleman LF, Lorr M. *Edits Manual for the Profile of Mood States: POMS*. San Diego, CA: Educational and Industrial Testing Service; 1992.
30. Carlson LE, Specia M, Patel KD, Goodey E. Mindfulness-based stress reduction in relation to quality of life, mood, symptoms of stress, and immune parameters in breast and prostate cancer outpatients. *Psychosom Med*. 2003;65(4):571-581.
31. Bultz BD, Specia M, Brasher PM, Geggie PH, Page SA. A randomized controlled trial of a brief psychoeducational support group for partners of early stage breast cancer patients. *Psychooncology*. 2000;9(4):303-313.
32. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Med Care*. 1992;30(6):473-483.
33. Ware JE, Kosinski M, Keller S. *SF-36 Physical and Mental Health Summary Scales: A User's Manual*. Boston, MA: Health Institute, New England Medical Center; 1994.
34. Spanier GB. Measuring dyadic adjustment: new scales for assessing the quality of marriage and similar dyads. *J Marriage Fam*. 1976;38(1):15-28.
35. Manne SL, Pape SJ, Taylor KL, Dougherty J. Spouse support, coping, and mood among individuals with cancer. *Ann Behav Med*. 1999;21(2):111-121.
36. Shrout PE, Bolger N. Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Psychol Methods*. 2002;7(4):422-445.
37. MacKinnon DP, Lockwood CM, Hoffman JM, West SG, Sheets V. A comparison of methods to test mediation and other intervening variable effects. *Psychol Methods*. 2002;7(1):83-104.
38. Street A, Couper J, Love A, Bloch S, Kissane D, Street B. Psychosocial adaptation in female partners of men with prostate cancer. *Eur J Cancer Care*. 2010;19(2):234-242.
39. Cameron JI, Shin JL, Williams D, Stewart DE. A brief problem-solving intervention for family caregivers to individuals with advanced cancer. *J Psychosom Res*. 2004;57(2):137-143.
40. Wade SL, Wolfe CR, Brown TM, Pestian JP. Can a web-based family problem-solving intervention work for children with traumatic brain injury? *Rehabil Psychol*. 2005;50(4):337-345.

How to cite this article: Malcarne VL, Ko CM, Roesch SC, Banthia R, Sadler GR. Efficacy of problem-solving therapy for spouses of men with prostate cancer: A randomized controlled trial. *Psycho-Oncology*. 2019;28:497-504. <https://doi.org/10.1002/pon.4964>