

This material is protected by U.S. copyright law. Unauthorized reproduction is prohibited. To purchase quantity reprints, please e-mail reprints@ons.org or to request permission to reproduce multiple copies, please e-mail pubpermissions@ons.org.

Prostate Cancer Survivors' and Partners' Self-Reports of Health-Related Quality of Life, Treatment Symptoms, and Marital Satisfaction 2.5–5.5 Years After Treatment

Michael E. Galbraith, RN, PhD, Adam Arechiga, MA, Jose Ramirez, MA, and Leli W. Pedro, RN, DNSc, OCN®

Purpose/Objectives: To describe health-related quality of life (QOL), health status, and marital satisfaction of couples as much as 5.5 years after treatment for prostate cancer.

Design: Survey with longitudinal, comparative, and predictive elements.

Setting: A tertiary care nonprofit medical center in the southwestern United States.

Sample: Convenience sample of prostate cancer survivors (192 enrolled, 137 completed) and their partners (126 enrolled, 104 completed). Men averaged 70 years of age, women 66. Most men (86%) and women (89%) were white, and 71% had at least some college education.

Methods: Questionnaires were mailed annually. Women were enrolled 3.5 years after their partners were treated. Study participants received separate questionnaire packets.

Main Research Variables: Health-related QOL, health status including post-treatment symptoms, and marital satisfaction.

Findings: Men's health-related QOL, general physical health, and vitality decreased; urinary and sexual post-treatment symptoms increased. Men were concerned about their sexual functioning although few sought treatment. Couples' health-related QOL and marital satisfaction were associated more closely than their health status.

Conclusions: Regardless of type of treatment, health-related QOL and general health tend to decrease for prostate cancer survivors; men in watchful waiting tended to have poorer health outcomes. Men are concerned about sexual functioning, yet few are taking steps to remedy problems. Couples' health-related QOL and marital satisfaction are linked; however, health status indicators are less associated.

Implications for Nursing: Nurses are in a key position to assess health-related QOL and sexual functioning concerns for prostate cancer survivors and their partners.

Key Points . . .

- ▶ The diagnosis, treatment, and survivorship issues for prostate cancer affect a couple's relationship and, thus, health-related quality of life (QOL).
- ▶ Sexuality and intimacy are critical aspects of health-related QOL for men with prostate cancer and their partners.
- ▶ Information to realistically anticipate and manage couples' sexual and relational challenges and to explore options to facilitate marital satisfaction is needed to enhance QOL for men with prostate cancer and their partners.
- ▶ Oncology nurses can play a central role in the assessment, planning, and evaluation of couple-centered strategies to support and enhance sexuality and intimacy.

diagnosis and treatment can have long-term effects on men physically, psychologically, and emotionally (American Cancer Society, 2005; Fan, 2002; Jakobsson, Hallberg, &

Michael E. Galbraith, RN, PhD, is faculty in the School of Nursing at Oregon Health and Science University, Southern Region, in Portland, and adjunct faculty in the Department of Psychology at Loma Linda University in California; Adam Arechiga, MA, and Jose Ramirez, MA, both are doctoral students in the Department of Psychology at Loma Linda University; and Leli W. Pedro, RN, DNSc, OCN®, is faculty in the School of Nursing at Oregon Health and Science University, Southern Region. This research was funded by an ONS Foundation Grant supported by Aventis Pharmaceuticals and an Intramural Seed Money Grant from the School of Nursing at Loma Linda University. (Submitted July 2004. Accepted for publication October 5, 2004.)

Digital Object Identifier: 10.1188/05.ONF.E30-E41

Prostate cancer is the most common nonskin cancer diagnosed among men, accounting for an estimated 33% of all cancer cases, with more than 232,090 new cases diagnosed in 2005. Because the five-year relative survival rate for early-stage cancer is nearly 100%, the experience of

Loven, 2000; Litwin, McGuigan, Shpall, & Dhanani, 1999; Skerrett, 2003). In addition, prostate cancer and treatment can affect both members of the couple over time, especially in the areas of sexuality, sexual functioning, and communication (Crowe & Costello, 2003; Harden et al., 2002; Jani & Hellman, 2003; Litwin, Melmed, & Nakazon, 2001; Malcarne et al., 2002; Monturo, Rogers, Coleman, Robinson, & Pickett, 2001; Navon & Morag, 2003; Penson, Litwin, & Aaronson, 2003; Walsh, Marschke, Ricker, & Burnett, 2000).

The purpose of this four-year follow-up study was to describe the health-related quality of life (QOL) and prostate cancer treatment-specific symptoms among men who had received various treatments for early-stage prostate cancer and were in extended survivorship 2.5–5.5 years following their initial treatment. In addition, associations among partner's health-related QOL, health status, and marital satisfaction were examined.

Literature Review

Long-Term Sequelae for Prostate Cancer Survivors

The main treatments recommended for early-stage prostate cancer are radical or laparoscopic prostatectomy and various forms of external beam radiation or brachytherapy. However, many seek other forms of treatment such as proton beam therapy, cryoablation, or alternative therapies (Bahn et al., 2002; Blana, Walter, Rogenhofer, & Wieland, 2004; Chodak, 1998; Diefenbach et al., 2003; DiPaola, Kumar, Hait, & Weiss, 2001; Eng, Thomas, & Herman, 2002; Peschel & Colberg, 2003; Ponholzer, Struhala, & Madersbacher, 2003; Touijer & Guillonnet, 2004; Zelefsky & Eid, 1998; Zietman, 2002). Currently, many different options exist for the treatment of prostate cancer, but few comparisons across treatment groups have demonstrated how men's lives are affected over time (Pickles, 2004; Turini, Redaelli, Gramegna, & Radice, 2003).

Physical symptoms associated with the treatment of prostate cancer affect the man's health-related QOL and, consequently, that of his partner in numerous ways (Althof, 2002). Radical prostatectomy can produce impotency rates ranging from 20%–80%, even when nerve-sparing procedures are used (Debruyne & Beerlage, 2000; Mirone, Imbimbo, Palmieri, Longo, & Fusco, 2003). Incontinence rates vary widely, yet often are described as very high immediately after surgery and can continue postoperatively (Drachenberg, 2000; Jani & Hellman, 2003; Talcott et al., 1998). External beam radiation treatment for prostate cancer can cause injury to the pelvic bed and neurovascular bundles, which can produce erectile dysfunction in 6%–84% of patients. Additionally, 25%–65% complained of long-term bowel complications such as diarrhea, urgency, bleeding, and urinary or sexual problems depending on the dose and type of radiation received (Incrocci, Slob, & Levendag, 2002; Zelefsky & Eid, 1998). These symptoms may not manifest for as many as two to five years following treatment (Lilleby, Fossa, Waehre, & Olsen, 1999; Peschel & Colberg, 2003; Potosky et al., 2000; Shrader-Bogen, Kjellberg, McPherson, & Murray, 1997; Wei et al., 2002; Yarbrow & Ferrans, 1998).

Long- and Short-Term Health-Related Quality of Life Following Prostate Cancer Treatment

The number of studies describing the health-related QOL and related psychosocial factors for men who have been

treated for localized prostate cancer has increased substantially since the mid-1990s (Clark et al., 2003; Davis, Kuban, Lynch, & Schellhammer, 2001; Germino et al., 1998; Hu et al., 2004; Lee, Hall, McQuellon, Case, & McCullough, 2001; McPherson, Swenson, & Kjellberg, 2001; Penson & Litwin, 2003b; Ptacek, Pierce, & Ptacek, 2002). In general, health-related QOL does not differ greatly among the most commonly used treatment modalities. However, the type and severity of treatment-related symptoms differ among the treatment groups (Bacon, Giovannucci, Testa, & Kawachi, 2001; Galbraith, Ramirez, & Pedro, 2001; Incrocci et al., 2002). Men who have received surgery have fewer bowel-related complications, yet tend to experience more urinary incontinence, irritation, and blockage. Patients treated with different forms of radiation report more gastrointestinal, bowel, and rectal side effects. Both groups report diminished sexual functioning; however, surgical patients complain of more sexual side effects during the first few months after treatment (Egawa et al., 2001; Robinson et al., 2002; Steineck et al., 2002).

Reports of sexual dysfunction following prostate cancer treatment range from 33%–98% and have a direct and negative effect on health-related QOL and intimate relationships (Althof, 2002; Dahn et al., 2004; Kirschner-Hermanns & Jakse, 2002; Lilleby et al., 1999; Schover et al., 2002b; Schwartz, Covino, Morgentaler, & DeWolf, 2000). Although many men seek professional help for their sexual dysfunction, these attempts did not resolve the underlying problems that may affect their intimate lives (Bertero, 2001; Bokhour, Clarke, Inui, Silliman, & Talcott, 2001; Eton, Lepore, & Helgeson, 2001; Harrod, 2003). Sexual dysfunction in this population is complex (Cooperberg et al., 2003); however, researchers and clinicians have focused primarily on erectile dysfunction and have not addressed issues of self-concept, desire, fantasy, or everyday interactions with intimate partners (Schover et al., 2002a).

Although most longitudinal studies have focused on survival and morbidity, some have focused on long-term QOL outcomes (Bacon et al., 2001; Bahn et al., 2002; Kim et al., 2001; Zietman, 2002). Most prostate cancer survivors report substantial adverse urinary, bowel, and sexual health outcomes two to four years after treatment, but some report QOL as more stable (Lee et al., 2001; Litwin, 2003; Litwin et al., 2001; Wei et al., 2002). Few research studies have followed patients with prostate cancer or couples longitudinally beyond five years post-treatment (Penson et al., 2003).

Prostate Cancer and Couples

Prostate cancer affects all members of a family, not just the patient, although few studies have reported on the dyadic experience (Feldman-Stewart, Brundage, & Mackillop, 2001; Giese-Davis, Hermanson, Koopman, Weibel, & Spiegel, 2000; Northouse, Templin, Mood, & Oberst, 1998; Skerrett, 2003; Wai-Ming, 2002). Men and women respond differently to the stress of a cancer diagnosis. Men tend to use more active problem-solving strategies that may change long-established roles for the couple (Carlson, Ottenbreit, St Pierre, & Bultz, 2001; Feldman-Stewart et al.; Lavery & Clarke, 1999; Shields, Travis, & Rousseau, 2000). Even if treatment is successful, the quality of the couple's relationship may be altered greatly (Malcarne et al., 2002).

Some researchers have noted that partners of patients with prostate cancer experience even more psychological distress than their mate, which currently is not well understood (Carl-

son, Bultz, Speca, & St. Pierre, 2000; Kiss & Meryn, 2001; Perez, Skinner, & Meyerowitz, 2002; Sestini & Pakenham, 2000). Fewer than half of men believed their partner supported them in their efforts to find help for their sexual dysfunction (Neese, Schover, Klein, Zippe, & Kupelian, 2003). However, partners may be most helpful by focusing on putting impotence into perspective and reassuring their spouses (Maliski, Heilemann, & McCorkle, 2001). Being part of a strong, positive relational dyad can buffer against psychological distress for patients with prostate cancer (Banthia et al., 2003). Partners of patients with prostate cancer may feel the need for more family-centered information to be better prepared to support their spouses after treatment (Butler, Downe-Wamboldt, Marsh, Bell, & Jarvi, 2000; Maliski et al.).

Study Framework

Health-related QOL for patients with prostate cancer is comprised of psychological, biophysical, functional, environmental, and social factors. Each person experiences specific symptoms related to these factors, which directly influence ongoing self-evaluations of his or her health status. This process enables men to determine the extent of the effect of diagnosis and treatment on their lives. Patients assess their health status by comparing actual life experience to what is normal for them and then determining which consequent adaptations are required (King et al., 1997; Padilla, Mishel, & Grant, 1992; Penson & Litwin, 2003b; Wilson & Cleary, 1995).

Cancer survivorship is comprised of lasting and complex combinations of physical, psychological, and social effects for patients with cancer extending long after treatment has been completed (Dow, 1990). Mullan (1985) further suggested that cancer survivorship has distinct seasons in which long-term survivors are challenged with physical, emotional, and interpersonal sequelae that result from the diagnosis, treatment, and recovery process beyond five years after treatment.

The family systems theory suggests that the impact of cancer is felt by the entire family, not just the identified patient. Family members may be influenced directly and indirectly by the impact of the diagnosis and subsequent treatments. Consequently, the entire family environment and social system must incorporate the experience into various system-related activities such as intimacy and communication, as well as finding functional and emotional balance (Minuchin, 1974; Morse & Fife, 1998; Wilson & Cleary, 1995).

Long-term physical symptoms from prostate cancer treatment can include impotence, incontinence, sexual dysfunction, and long-term bowel and bladder complications such as diarrhea, urgency, bleeding, or cystitis. Additionally, these outcomes may occur several years following treatment (Albert et al., 2003; Galbraith et al., 2001; Jani & Hellman, 2003; Penson & Litwin, 2003a; Talcott, 2003; Yarbrow & Ferrans, 1998). Therefore, prostate cancer survivors may continue to experience treatment-related late side effects that can affect many factors associated with their health-related QOL and that of their partner for years after the initial treatment.

Methods

This follow-up longitudinal survey design study had descriptive, correlational, predictive, and comparative elements.

Sample

A total of 192 men who had received treatment at a tertiary facility in San Bernardino County in region five of the California Statewide Cancer Reporting System and who had participated in an earlier prostate cancer QOL study were invited to participate (see Galbraith et al., 2001). No age or race limitations or known cognitive disabilities existed, and participants were able to speak, write, or understand English. The patients had been treated with watchful waiting, surgery, or some form of radiation. Radiation treatment included (a) conventional external beam, (b) proton beam therapy, (c) standard protocol mixed-beam that was a combination of proton beam therapy and external beam radiation (74–75 Gy), (d) low-dose mixed beam (70 Gy), or (e) high-dose mixed-beam radiation (75 Gy) (Slater et al., 1999; Yonemoto et al., 1997). Additionally, 3.5 years after the men had been treated, 126 of their partners agreed to participate and were enrolled.

At the 5.5-year post-treatment data collection point, 137 (71%) of the 192 men initially invited to participate in the study still remained active. Likewise, 104 (83%) of the 126 women initially invited to participate were still in the study. This represented an attrition rate of 29% for the men and 17% for the women. In the initial study, the overall attrition rate was 17% (Galbraith et al., 2001). The attrition rate for men had slowed over the course of the four-year follow-up study, and the rate of dropout for the women was similar to the dropout rate observed in the earlier study. Additionally, over the course of the study, 20 men died, 4 from prostate cancer, 6 from illnesses such as cardiac disease and other cancers, and 10 from unknown causes.

Instruments

Quality-of-Life Index: This instrument was designed to assess health-related QOL among patients with cancer (Padilla et al., 1983). It assesses biophysical symptoms, psychological and social factors, and general QOL. The QOL Index contains 14 items and uses a 100-mm linear analog scale on which participants indicate with an X their response to each item. The position of the X is measured, and the distance from the left anchor is used for analysis. An example of the two end points that serve as anchors for the linear analog scale is “none” or “not at all” to “normal for me.” Internal consistency was reported to be 0.88. The measure was selected for the proposed study because it discriminates well between patients with cancer and nonpatients, the linear analog is easy for older patients to use, the measure has been used previously with patients with prostate cancer, and it takes only 5–10 minutes to complete.

Medical Outcomes Study General Health Survey: This survey contains 36 items that represent eight health concepts: physical functioning; physical, emotional, and social role functioning; vitality; mental health; bodily pain; and general health. Reliability coefficients for the scales range from 0.81–0.88, and the instrument differentiated well between patients who were ill and the general population (Stewart, Hays, & Ware, 1988). Scores are summed with reversed items being recoded so that higher scores reflect better health. The instrument takes approximately 10 minutes to complete and has been used in a variety of studies including those with patients with prostate cancer.

Southwest Oncology Group Prostate Treatment-Specific Symptoms Measure: This 19-item measure was developed

specifically to compare treatment-related symptoms that can result from any prostate cancer treatment strategy (Moinpour, Hayden, Thompson, Feigl, & Metch, 1990). Symptoms included were related to bowel, bladder, and sexual functioning. Items are scored on Likert-type and binomial scales and can be used individually. Items related to specific bowel, bladder, and sexual functioning were combined into three subscales. Reliability coefficients for the three subscales ranged from 0.42–0.93. The scale took approximately 10 minutes for the men to complete.

Dyadic Adjustment Scale: This instrument was designed to assess the quality of marriage and other similar dyads and satisfaction with the relationship (Spanier, 1976). The 32-item scale is constructed of four empirically supported components of consensus, satisfaction, cohesion, and affectional expression. Items are scored on Likert-type scales, and the range of total scores for the measure is 0–151, with higher numbers representing increased marital adjustment and satisfaction. The internal consistency reliability coefficient for the measure is 0.96, and it takes approximately 15–20 minutes to complete.

Procedures

The men in this study participated in a previous prostate cancer QOL study and agreed to annual follow-up (Galbraith et al., 2001). A cover letter, questionnaire, and self-addressed stamped envelope were mailed annually to the men. Spouses or partners of the men who were participating in the study were contacted by telephone and invited to take part in the annual follow-up. If they expressed interest, they received a packet via mail that included a consent form, questionnaire, and self-addressed envelope for the return of study-related materials. Before each annual mailing, telephone contact was made with study participants reminding them to expect the questionnaire packet in a week or two. Each participant received his or her own packet to encourage individual responses and provide confidentiality. They were reminded to complete their own questionnaire and assured their responses would not be shared with their partner.

Findings

The average age of the men was 70 years, with the participants in the watchful-waiting group being the oldest and the surgical patients being the youngest ($F_{(6)} = 5.1, p < 0.001$). Eighty-eight percent of the men were married or partnered. Seventy-one percent had at least some college education, and 36% had annual incomes of over \$50,000, with the men in the proton beam therapy group reporting the highest incomes ($\chi^2 = 20.7, p = 0.002$). Most men were white (86%); however, Hispanic (6%), black (5%), and Asian (2%) men, as well as those of undisclosed ethnicity (1%), were represented in the sample.

The average age of the partners enrolled 3.5 years post-treatment was 66 years, and 66% were college educated. The majority of the partners were white (89%), although Hispanics (7%), blacks (2%), and Asians (2%) also were represented (see Table 1).

To accommodate for missing data and attrition of study participants over a multiple-year follow-up study, growth curve analyses (Khattree & Naik, 1999) were used to describe the performance of the outcome variables among the treatment

groups. Growth curve analyses estimate slopes and intercepts for each subject despite missing data or cases.

Post-hoc contrasts were used to examine differences among the groups at each year. Differences must be viewed in light of progressively smaller-cell Ns; caution should be exercised in interpreting the findings. Attention should be given to trends rather than specific findings. In addition, smaller-cell Ns may contribute to larger differences that are not significant. For a complete summary of the trends in differences among the seven prostate cancer treatment groups, see Table 2.

Quality of Life

QOL generally decreased among the groups over the four years ($F [1, 178] = 27.5, p < 0.001$) (see Figure 1). At 5.5 years, the men who were in the watchful-waiting group had lower QOL scores than the men in the conventional radiation group or the low-dose mixed-beam radiation group.

Health Status

Physical functioning declined overall among all the groups over the four years ($F [1, 180] = 11.63, p < 0.001$) (see Figure 2A). However, the men did not decline significantly in their ability to perform their physical (see Figure 2B) or emotional roles (see Figure 2C) over the course of the study. The men in the low-dose mixed-beam radiation group tended to score higher in their ability to perform their physical role functions than men in the surgery group.

Differences were found among the groups in their emotional role functioning ($F [6, 293] = 2.52, p = 0.02$) at 2.5 years. The men in the low-dose mixed-beam radiation group had fewer role limitations caused by emotional problems at 2.5 years than did the men in the watchful-waiting group. Vitality also decreased overall among all of the groups ($F [1, 181] = 12.71, p < 0.001$) (see Figure 2D). Again, at 2.5 and 3.5 years, men in the low-dose mixed-beam radiation group reported higher vitality scores than men who had received proton beam therapy only.

An overall change in mental health was not reported over the four years of the study (see Figure 2E); however, 4.5 years after treatment, men who had received low-dose mixed-beam radiation reported better mental health than men who were in the watchful-waiting group even though they did not report the largest difference. Note the positive, upward trend in mental health for the surgery and proton beam therapy groups although it did not reach significance.

Social functioning differed among the groups ($F [6, 298] = 2.16, p = 0.05$). The watchful-waiting group reported the lowest scores 2.5 and 3.5 years following treatment (see Figure 2F), but no significant trends or differences in bodily pain were noted (see Figure 2G).

General health decreased in all groups over the four years of the study ($F [1, 181] = 112.02, p < 0.001$). Men in the low-dose mixed-beam radiation group tended to report higher scores than men in the watchful-waiting group at 2.5, 3.5, and 4.5 years (see Figure 2H).

Treatment-Specific Symptoms

Gastrointestinal (GI) symptoms differed among the participant groups ($F [6, 286] = 2.92, p = 0.009$). At 2.5 years, men in the low-dose mixed-beam radiation group reported fewer GI symptoms than men in the high-dose mixed-beam radiation group. In general, men in the low-dose mixed-beam

Table 1. Selected Demographic Characteristics for the Seven Treatment Groups

Treatment Group	\bar{X} Age (Years)	Married or Partnered (%)	Some College (%)	Yearly Income Less Than \$50,000 (%)	White (%)	Black or Hispanic (%)
Watchful waiting		76		62		
Men (n = 21)	76	—	52	—	81	10
Women (n = 8)	74	—	38	—	100	—
Surgery		96		75		
Men (n = 39)	67	—	58	—	82	16
Women (n = 22)	65	—	68	—	86	9
Conventional radiation		94		69		
Men (n = 18)	72	—	65	—	71	24
Women (n = 11)	66	—	36	—	73	18
Proton beam therapy		95		44		
Men (n = 21)	72	—	85	—	95	5
Women (n = 15)	69	—	67	—	87	13
Standard protocol mixed-beam radiation		87		53		
Men (n = 37)	71	—	78	—	95	5
Women (n = 22)	65	—	73	—	91	9
Low-dose mixed-beam radiation		76		68		
Men (n = 25)	69	—	76	—	84	12
Women (n = 20)	65	—	65	—	100	—
High-dose mixed-beam radiation		87		67		
Men (n = 31)	68	—	81	—	90	7
Women (n = 27)	62	—	67	—	85	15

N = 192 men and 125 women

radiation group reported GI symptoms at a rate similar to men in the surgery group (see Figure 3A).

Overall, urinary symptoms increased over the course of the study ($F [1, 181] = 4.28, p = 0.04$). However, this trend was driven by three of the seven groups, with men in the watchful-waiting group reporting the most urinary symptoms (see Figure 3B). In general, sexual symptoms tended to remain high ($F [1, 178] = 10.04, p = 0.002$), with men in the watch-

ful-waiting group typically reporting the most symptoms at 5.5 years (see Figure 3C).

Symptom Trends Among the Groups

Treatment-specific symptoms were measured using response options ranging from 1–5, with lower scores indicating few or no problems and higher scores indicating more severe problems. The means for urine symptom scales ranged from a

Table 2. Summary of Differences Among the Seven Prostate Cancer Treatment Groups in Outcome Measures Over Four Years

Outcome Measure	2.5 Years	3.5 Years	4.5 Years	5.5 Years
Health-related quality of life	LD versus WW	LD versus MB	LD versus WW	LD*, C versus WW
Health status^a				
Physical functioning	LD versus WW*	LD versus C*	MB versus PB	WW versus PB
Physical role functioning	LD versus WW*	LD versus C	MB versus WW*	LD versus S
Emotional role functioning	LD versus WW**	LD versus WW	MB versus C	MB versus WW*
Vitality	LD versus PB**	LD versus WW*	LD versus WW	LD versus WW*
Mental health	LD versus WW	LD versus WW*	LD versus WW**	LD versus WW
Social functioning	LD versus WW***	LD versus WW**	LD versus WW	C, LD versus WW
Bodily pain	S versus MB*	LD versus MB*	PB versus WW	WW versus MB
General health	LD versus WW*	LD versus WW**	LD versus WW**	LD versus MB
Treatment-specific symptoms^b				
Urinary	LD versus WW**	LD versus WW*	S versus WW*	C versus WW**
Gastrointestinal	S versus HD**	WW versus HD*	S versus C*	S versus C*
Sexual	HD versus WW	MB versus WW	LD versus WW	MB versus WW*

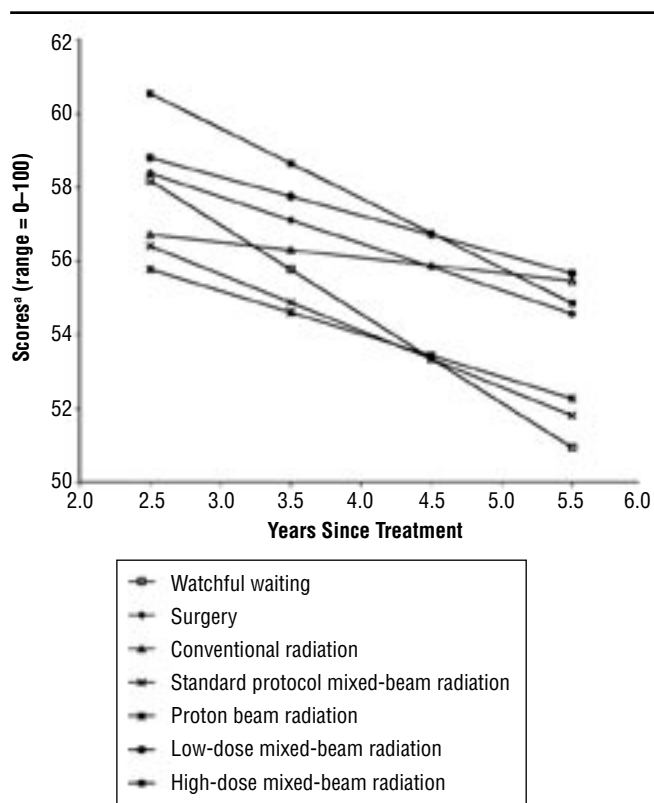
N = 192

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

^aThe treatment group listed first has the highest health-related quality of life and health status scores; the group listed second has the lowest scores.

^bThe treatment group listed first reported the lowest number of symptoms; the group listed second reported the highest number of symptoms.

C—conventional radiation; HD—high-dose mixed-beam radiation; LD—low-dose mixed-beam radiation; MB—standard protocol/mixed-beam radiation; PB—proton beam radiation; S—surgery; WW—watchful waiting



^a Higher scores indicate increased health-related quality of life.

Figure 1. Health-Related Quality of Life

low of 1.5 for the low-dose mixed-beam radiation and surgery groups to a high of 2.2 for men in the watchful-waiting group. Similarly, the means on the GI symptom scales ranged from a low of 1.2 for the surgery and watchful-waiting groups to a high of 1.6 for the high-dose mixed-beam radiation, conventional radiation, and standard protocol mixed-beam radiation groups. However, a different pattern emerged for sexual symptoms. The scores ranged from a low of 3.6 for the standard protocol mixed-beam radiation group to a high of 4.3 for the men in the watchful-waiting group (see Table 3).

After examining individual sexual symptom items, men in all of the treatment groups had substantial concerns. When asked about their ability to have erections, only 7% reported that their erections were adequate for normal intercourse, whereas 66% indicated they were not able to achieve an erection adequate to allow for penetration. Only 4% had surgical interventions for impotence, and 27% had received other treatments for erectile dysfunction.

Although approximately a quarter of the sample reported that they had received nonsurgical treatment for erection dysfunction, 54% reported “moderate” to “very high” interest in sexual activities whereas only 25% reported “low” or “very low” interest. Twelve percent stated that their ability to function sexually was “good” to “very good,” but 42% stated that their ability to function was “very poor.” Only 3% were “very satisfied” with their sexual activities or functioning, yet 62% reported they were “not very satisfied” or “not at all satisfied” with either their sexual abilities or functioning. Fifty-eight percent reported that they had not had any sexual activities or intercourse during the prior month. Of those men

who reported no sexual activities in the prior month, 60% indicated it had bothered them at least “some” to “a lot,” whereas 23% indicated the lack of sexual activities had not bothered them at all.

Couples’ Experiences

The levels of association on outcome measures among couples’ self-reports of QOL, marital satisfaction, and health status were evaluated by using the men’s scores in a regression equation to predict their partner’s scores on the same variable. Additionally, the number of comorbidities for each member of the couple was used as a covariate to lessen the effect of differences in physical status. After removing the variance associated with the covariates, the partial correlation coefficient r was a measure of the uniquely shared variance between a man and his partner on each of the outcome measures.

At 3.5 years, the couples’ QOL (partial $r = 0.44$, $p < 0.01$), marital satisfaction (partial $r = 0.83$, $p < 0.01$), and emotional role functioning (partial $r = 0.30$, $p < 0.05$) were significantly correlated. At 4.5 years, the couples’ QOL (partial $r = 0.36$, $p < 0.05$) and marital satisfaction (partial $r = 0.94$, $p < 0.01$) also were significantly associated (see Table 4).

Discussion

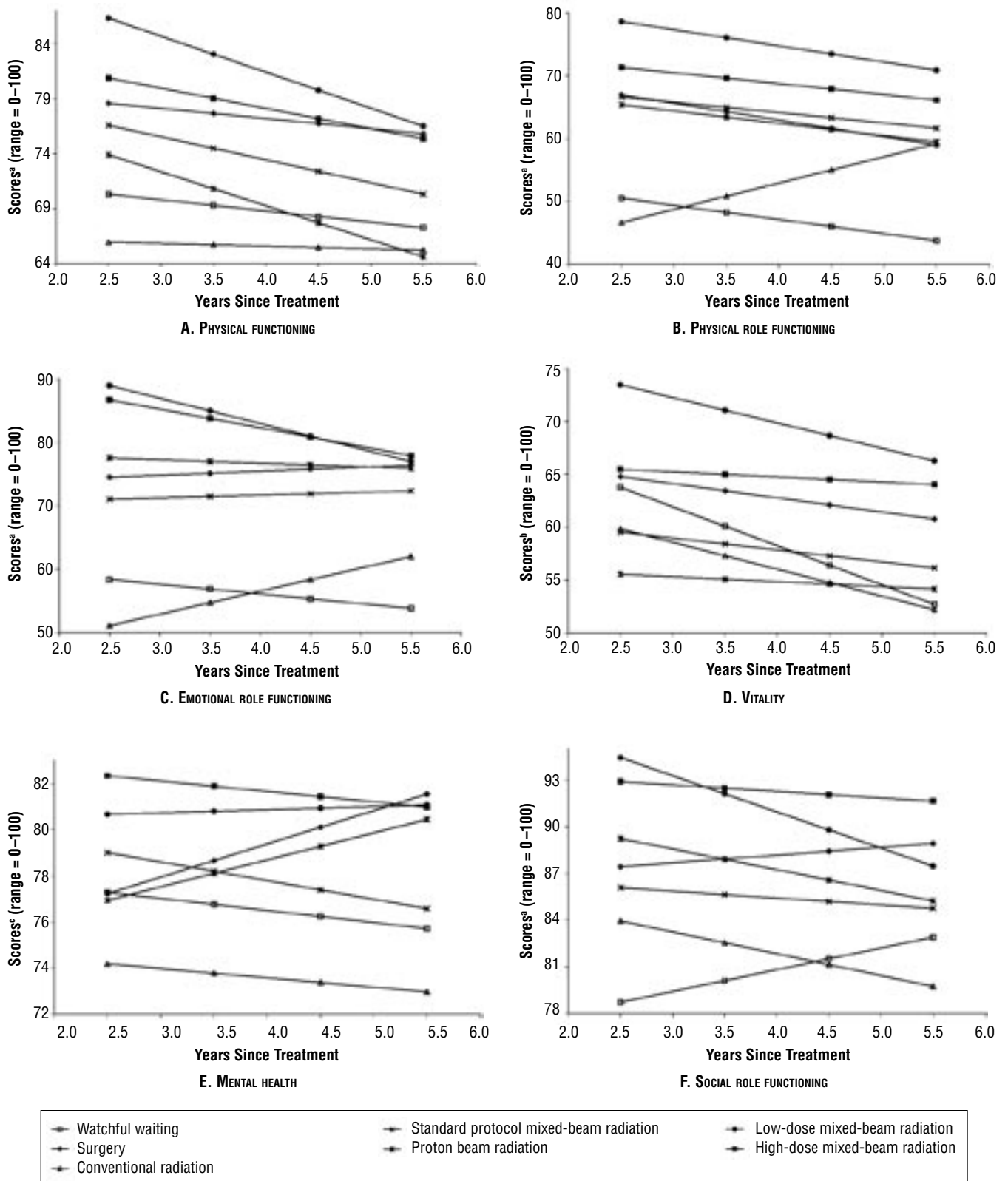
Quality of Life

The findings of diminishing QOL over time are consistent with other studies on prostate cancer survivors (Talcott, 2003). In general, men in the low-dose mixed-beam radiation group tended to report better QOL scores than men in the watchful-waiting group. However, the average age of men in the study was around 70 years; as a result, the aging process can cause poorer health outcomes overall in addition to surviving prostate cancer (Van Andel, Visser, Hulshof, Horenblas, & Kurth, 2003).

In the current study, no overall differences were found among the treatment groups as Sprangers (1996) suggested, but regardless of the symptoms, people often view their QOL as more favorable because they do not compare their current perceptions to pretreatment conditions. Rather, they compare themselves to their current self-image.

Health Status

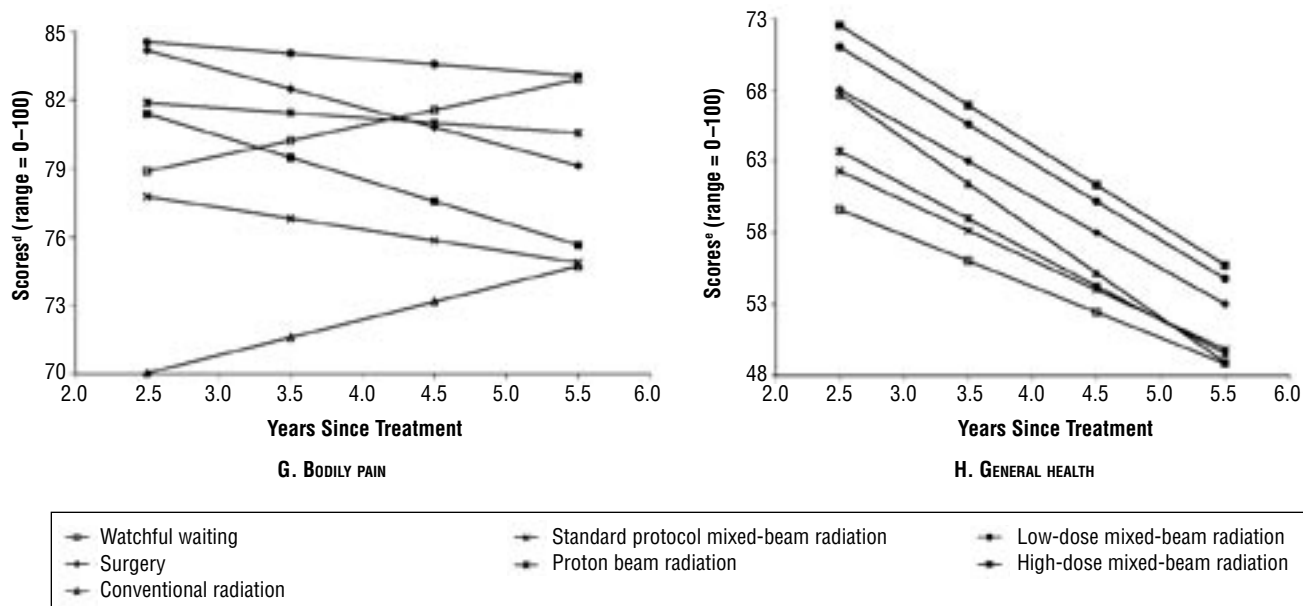
Only scores on three of the eight health status scales significantly declined over the four years of the study among the seven treatment groups, specifically in physical functioning, vitality, and general health. This supports other findings that demonstrate stability of self-reported health-related QOL and health status over time (Lee et al., 2001). Additionally, significant differences were found among the treatment groups in emotional role and social functioning over the time frame of the study. In general, the low-dose mixed-beam radiation group fared better than men in the other treatment groups, especially in pain, vitality, physical functioning, and both emotional and physical role functioning. Men in the watchful-waiting group tended to report poorer outcomes than the other treatment groups over the four years of the study, especially in QOL, general health, and physical, emotional, and social role functioning. This is consistent with the perspective that men who opt for watchful waiting sometimes have worse health outcomes (Pickles,



^a Higher scores represent better functioning.
^b Higher scores represent more vitality.
^c Higher scores represent better mental health.

(Continued on next page)

Figure 2. Health Status Outcome Measures



^d Higher scores represent less pain.

^e Higher scores represent better health.

Figure 2. Health Status Outcome Measures (Continued)

2004). However, men enrolled in this study had been treated or followed for early-stage prostate cancer; therefore, these findings may not apply to men who have a more advanced stage of disease.

Treatment-Specific Symptoms

Self-reported urinary and sexual symptoms increased over the course of the study, with men in the watchful-waiting group having the most concerns. Men in the low-dose mixed-beam radiation group reported the fewest urinary concerns at 2.5 and 3.5 years after treatment, yet expressed more concerns than the surgical group at 4.5 and 5.5 years. Initially, the men who had received either low- or high-dose mixed-beam radiation tended to report fewer sexual symptoms. However, sexual concerns tended to increase for the high-dose mixed-beam radiation group. This is consistent with Penson et al.'s (2003) findings that radiation treatment for prostate cancer initially tends to result in fewer sexual side effects than other treatments, but men's self-reported sexual and urinary symptoms should be followed over time.

Men in the watchful-waiting group primarily accounted for differences among the treatment groups in GI symptoms over the four years of the study. Men in other radiation groups, such as the high-dose mixed-beam radiation, conventional radiation, and standard protocol mixed-beam radiation, also tended to report more GI symptoms than other treatment groups over the course of the study.

Trends of Increased Sexual Concerns

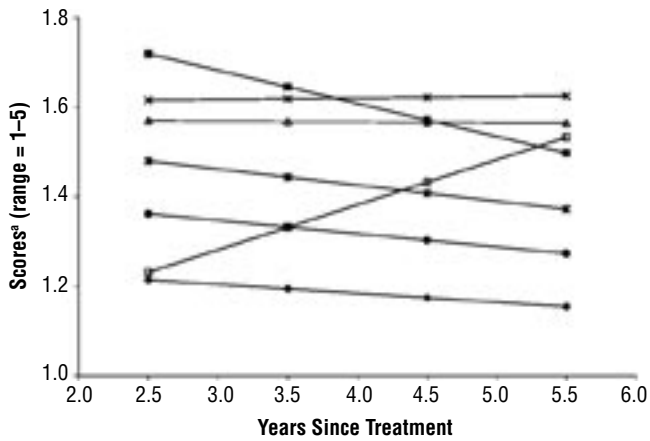
Overall, men in the study indicated that they were more concerned with sexual issues than other prostate cancer treatment-related side effects. This trend has been supported by other studies that indicate men continue to have sexual challenges after treatment (Jenkins et al., 2004; Meyer, Gil-

latt, Lockyer, & Macdonagh, 2003; Neese et al., 2003). Few men reported being able to have normal sexual relations, and even fewer reported that they were satisfied with their sexual functioning. Nearly two-thirds of the men indicated that they were not able to achieve erections that were adequate for intercourse, and more than half said that they had not had any sexual relations in the past month. Almost 60% of the men said that they were bothered "some" or "a lot" by their lack of sexual activities, but only about a quarter of the sample indicated that they had received nonsurgical treatment for impotency. This indicates a critical need for information and assistance for this group of men. Although these men were challenged in their ability to function sexually, most reported they still were interested in sex and bothered by this diminished functioning. Twenty-three percent indicated they were not bothered at all with their lack of sexual activities, which is consistent with other findings reporting that even though survivors of prostate cancer are among the aging population, most men continue to be concerned with maintaining an active sex life (Crowe & Costello, 2003; Harden et al., 2002; Harrod, 2003).

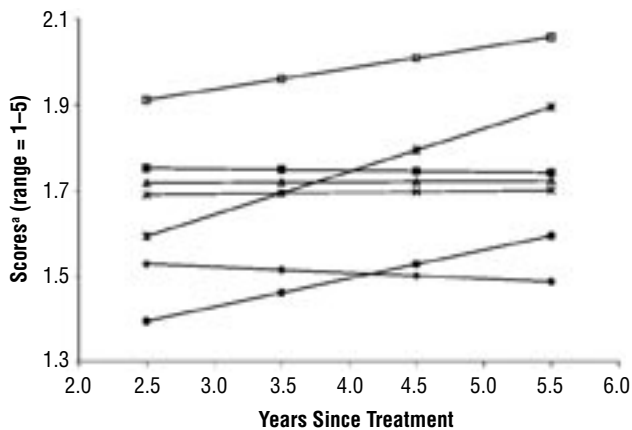
Couples' Experiences

The researchers expected that couples' health-related QOL, marital satisfaction, and health status would be associated, which was supported partially. Their health-related QOL and marital satisfaction were associated 3.5 and 4.5 years after initial prostate cancer treatment, but that association did not persist 5.5 years post-treatment. However, the sample size had decreased by the 5.5-year data collection point and may not have been adequate to demonstrate a significant association.

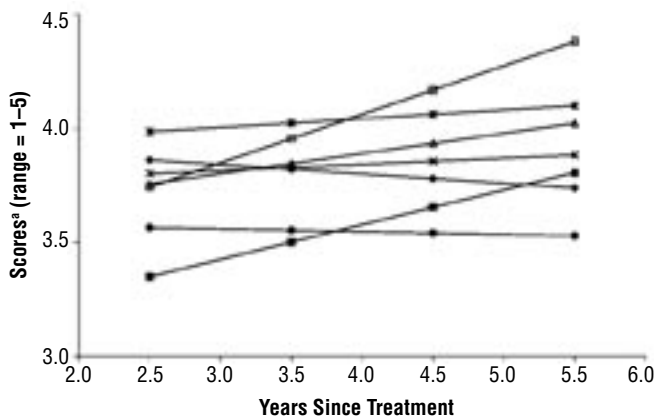
Few significant relationships were found among the eight dimensions of the couples' self-reported health status. Perhaps



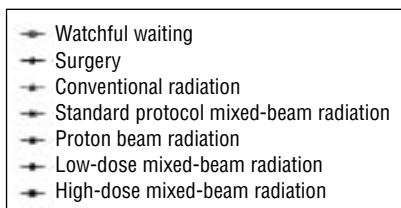
A. GASTROINTESTINAL SYMPTOMS



B. URINARY SYMPTOMS



C. SEXUAL SYMPTOMS



^a Higher scores represent more symptoms.

Figure 3. Treatment-Specific Symptoms

Table 3. Average Scores of Symptoms Over the Four-Year Time Period of the Study

Type of Treatment	Symptom Type		
	Gastrointestinal	Urinary	Sexual
Watchful waiting	1.2	2.2	4.3
Surgery	1.2	1.5	3.7
Conventional radiation	1.6	1.7	3.8
Proton beam therapy	1.4	1.6	3.9
Standard protocol mixed-beam radiation	1.6	1.6	3.6
Low-dose mixed-beam radiation	1.3	1.5	3.7
High-dose mixed-beam radiation	1.6	1.7	3.8

N = 192

Note. Scores on symptom scales range from 1–5, with higher scores indicating more symptoms.

each member of the couple viewed his or her health status as more of an individual experience, whereas marital satisfaction and overall health-related QOL may have been seen as influencing the couple as a whole. Other research in the area of health-related QOL in couples has demonstrated that although the health experience of one member of a couple may influence the other, each person has individual health concerns and needs (Harden et al., 2002; Neese et al., 2003).

Clinical Implications

The primary objectives of this study were twofold. The first objective was to follow the QOL of men 2.5–5.5 years after their initial treatment for prostate cancer. The second objective was to determine how much the men's health-related QOL, health status, and marital satisfaction predicted their partners' outcomes on the same variables. In general, regardless of the type of treatment they received, their health-related QOL decreased over the course of the study. This finding is consistent with other reports that as people age, they tend to experience additional health challenges that translate into poorer health outcomes (Van Andel et al., 2003).

The men in the watchful-waiting group tended to report that they experienced as many, if not more, prostate-related symptoms than those who had received surgery or some form of radiation. Watchful waiting continues to be a viable option for men who have slow-growing disease or less than a 10-year life expectancy (Pickles, 2004). However, the findings in this study support the idea that men who are not seeking one of the active treatments for early-stage prostate cancer are still at risk for problematic health symptoms. Although watchful waiting is one of the treatment options available to patients with prostate cancer, it must be the correct choice for each individual patient (Wallace, Bailey, O'Rourke, & Galbraith, 2004).

Overall, sexual concerns remained high for men in the study. Other researchers have found that sexual issues remain salient for men even though they are aging (Van Andel et al., 2003). Most men were concerned about sexual issues and reported low satisfaction with their sexual functioning, but

Table 4. Partial and Zero-Order Correlations Among Couples' Health-Related Quality of Life, Relationship Satisfaction, and Health Status at 3.5, 4.5, and 5.5 Years Post-Treatment

Outcome Measures	3.5 Years		4.5 Years		5.5 Years	
	Partial Correlations	Zero-Order Correlations	Partial Correlations	Zero-Order Correlations	Partial Correlations	Zero-Order Correlations
Health-related quality of life	0.44***	0.51	0.36**	0.40	0.27	0.27
Dyadic Adjustment Scale relationship satisfaction	0.83***	0.83	0.94***	0.87	0.37	0.47
Medical Outcomes Study						
Physical functioning	0.28*	0.29	0.11	0.12	-0.18	-0.15
Physical role functioning	0.10	0.13	0.05	0.02	-0.10	-0.11
Emotional role functioning	0.30**	0.35	0.13	0.09	0.19	0.19
Vitality	0.12	0.23	-0.12	-0.09	0.05	0.04
Mental health	-0.07	-0.03	0.01	0.01	0.04	0.02
Social functioning	0.10	0.22	0.10	0.10	0.07	0.08
Bodily pain	0.17	0.20	-0.01	0.00	-0.30*	-0.24
General health	0.18	0.20	0.01	0.01	-0.10	-0.12

N = 126 couples

* p < 0.10, ** p < 0.05, *** p < 0.01

relatively few sought treatment. This is of particular interest in that the study was conducted during a time period where erectile dysfunction medications became available, but not all men who have received prostate cancer treatment respond to these medications (Meuleman & Mulders, 2003). However, additional treatments are available, and healthcare providers should follow up with their patients to determine treatment efficacy. Additionally, if men were continuing to report that they were not satisfied with their sexual life, alternative methods to approach this issue should be explored.

Prostate cancer clearly affects both members of a couple, but how couples manage this challenge is less clear. Some investigators and clinicians have identified issues that are salient to couples surviving prostate cancer, yet fewer have looked at interventions designed to assist couples as they navigate this experience (Maliski et al., 2001; Monturo et al., 2001; Neese et al., 2003). Nurses are in a prime position to help couples with some of these challenges. Not only can nurses educate couples about potential long-term consequences of prostate cancer treatment, they also can follow up to determine whether the information was useful and help them access additional resources if needed. Advanced practice nurses could increase their awareness of potential

sexual problems and consequently individualize their sexual assessment if they know patients have been treated or are being followed for prostate cancer. They can offer suggestions related to possible treatment or educational options that would be appropriate for couples. In addition, nurses can assess the partner as well. Sexuality is a critical component of health-related QOL and marital satisfaction; therefore, these issues should not be ignored simply because patients are older. Sexuality and intimacy issues continue to be relevant, regardless of age. With this increased focus on meeting the information, communication, intimacy, and educational needs of couples surviving prostate cancer, nurses can affect how men and their partners live with the long-term challenges that prostate cancer and treatment bring to their health-related QOL and relationship experiences.

The authors gratefully acknowledge the Departments of Radiation and Urology at Loma Linda University in California and express their appreciation to research assistants Erin Bantum, MA, Robert Hull, MA, Valinda Lee, BA, and Hsinya Chichester, PsyD.

Author Contact: Michael E. Galbraith, RN, PhD, can be reached at galbraim@ohsu.edu, with copy to editor at rose_mary@earthlink.net.

References

- Albert, M., Tempany, C.M., Schultz, D., Chen, M.H., Cormack, R.A., Kumar, S., et al. (2003). Late genitourinary and gastrointestinal toxicity after magnetic resonance image-guided prostate brachytherapy with or without neoadjuvant external beam radiation therapy. *Cancer*, *98*, 949-954.
- Althof, S.E. (2002). Quality of life and erectile dysfunction. *Urology*, *59*, 803-810.
- American Cancer Society. (2005). *Cancer facts and figures*. Atlanta, GA: Author.
- Bacon, C.G., Giovannucci, E., Testa, M., & Kawachi, I. (2001). The impact of cancer treatment on quality of life outcomes for patients with localized prostate cancer. *Journal of Urology*, *166*, 1804-1810.
- Bahn, D.K., Lee, F., Badalment, R., Kumar, A., Greski, J., & Chernick, M. (2002). Targeted cryoablation of the prostate: 7-year outcomes in primary treatment of prostate cancer. *Urology*, *60*(2, Suppl. 1), 3-11.
- Banthia, R., Malcarne, V.L., Varni, J.W., Ko, C.M., Sadler, G.R., & Greenbergs, H.L. (2003). The effects of dyadic strength and coping styles on psychological distress in couples faced with prostate cancer. *Journal of Behavioral Medicine*, *26*, 31-52.
- Bertero, C. (2001). Altered sexual patterns after treatment for prostate cancer. *Cancer Practice*, *9*, 245-251.
- Blana, A., Walter, B., Rogenhofer, S., & Wieland, W.F. (2004). High-intensity focused ultrasound for the treatment of localized prostate cancer: 5-year experience. *Urology*, *63*, 297-300.
- Bokhour, B.G., Clarke, J.A., Inui, T.S., Silliman, R.A., & Talcott, J.A. (2001). Sexuality after treatment for early prostate cancer: Exploring the meanings of "erectile dysfunction." *Journal of General Internal Medicine*, *16*, 649-655.
- Butler, L., Downe-Wamboldt, B., Marsh, S., Bell, D., & Jarvi, K. (2000).

- Behind the scenes: Partners' perceptions of quality of life post radical prostatectomy. *Urologic Nursing*, 20, 254–258.
- Carlson, L.E., Bultz, B.D., Specia, M., & St. Pierre, M. (2000). Partners of cancer patients part I. Impact, adjustment, and coping across the illness trajectory. *Journal of Psychosocial Oncology*, 18(2), 39–63.
- Carlson, L.E., Ottenbreit, N., St Pierre, M., & Bultz, B.D. (2001). Partner understanding of the breast and prostate cancer experience. *Cancer Nursing*, 24, 231–239.
- Chodak, G.W. (1998). Comparing treatments for localized prostate cancer—Persisting uncertainty. *JAMA*, 280, 1008–1010.
- Clark, J.A., Inui, T.S., Silliman, R.A., Bokhour, B.G., Krasnow, S.H., Robinson, R.A., et al. (2003). Patient's perceptions of quality of life after treatment for early prostate cancer. *Journal of Clinical Oncology*, 21, 3777–3784.
- Cooperberg, M.R., Koppie, T.M., Lubeck, D.P., Ye, J., Grossfeld, G.D., Mehta, S.S., et al. (2003). How potent is potent? Evaluation of sexual function and bother in men who report potency after treatment for prostate cancer: Data from CaPSURE. *Urology*, 61, 190–196.
- Crowe, H., & Costello, A.J. (2003). Prostate cancer: Perspectives on quality of life and impact of treatment on patients and their partners. *Urologic Nursing*, 23, 279–285.
- Dahn, J.R., Penedo, F.J., Gonzalez, J.S., Esquiabro, M., Antoni, M.H., Roos, B.A., et al. (2004). Sexual functioning and quality of life after prostate cancer treatment: Considering sexual desire. *Urology*, 63, 273–277.
- Davis, J.W., Kuban, D.A., Lynch, D.F., & Schellhammer, P.F. (2001). Quality of life after treatment for localized prostate cancer: Differences based on treatment modality. *Journal of Urology*, 166, 947–952.
- Debruyne, F.M., & Beerlage, H.P. (2000). The place of radical prostatectomy in the treatment of early localized prostate cancer. *Radiotherapy and Oncology*, 57, 259–262.
- Diefenbach, M.A., Hamrick, N., Uzzo, R., Pollack, A., Horwitz, E., Greenberg, R., et al. (2003). Clinical, demographic and psychosocial correlates of complementary and alternative medicine use by men diagnosed with localized prostate cancer. *Journal of Urology*, 170, 166–169.
- DiPaola, R.S., Kumar, P., Hait, W.N., & Weiss, R.E. (2001). State-of-the-art prostate cancer treatment and research. A report from the Cancer Institute of New Jersey. *New Jersey Medicine*, 98(2), 23–33.
- Dow, K.H. (1990). The enduring seasons in survival. *Oncology Nursing Forum*, 17, 511–516.
- Drachenberg, D.E. (2000). Treatment of prostate cancer: Watchful waiting, radical prostatectomy, and cryoablation. *Seminars in Surgical Oncology*, 18, 37–44.
- Egawa, S., Shimura, S., Irie, A., Kitano, M., Nishiguchi, I., Kuwano, S., et al. (2001). Toxicity and health-related quality of life during and after high dose rate brachytherapy followed by external beam radiotherapy for prostate cancer. *Japanese Journal of Clinical Oncology*, 31, 541–547.
- Eng, T.Y., Thomas, C.R., & Herman, T.S. (2002). Primary radiation therapy for localized prostate cancer. *Urologic Oncology*, 7, 239–257.
- Eton, D.T., Lepore, S.J., & Helgeson, V.S. (2001). Early quality of life in patients with localized prostate carcinoma: An examination of treatment-related, demographic, and psychosocial factors. *Cancer*, 92, 1451–1459.
- Fan, A. (2002). Psychological and psychosocial effects of prostate cancer. *Nursing Standard*, 17(13), 33–37.
- Feldman-Stewart, D., Brundage, M.D., & Mackillop, W.J. (2001). What questions do families of patients with early-stage prostate cancer want answered? *Journal of Family Nursing*, 7, 188–207.
- Galbraith, M.E., Ramirez, J.W., & Pedro, L.W. (2001). Quality of life, health outcomes, and identity for patients with prostate cancer in five different treatment groups. *Oncology Nursing Forum*, 28, 551–560.
- Germino, B.B., Mishel, M.H., Belyea, M., Harris, L., Ware, A., & Mohler, J. (1998). Uncertainty in prostate cancer: Ethnic and family patterns. *Cancer Practice*, 6, 107–113.
- Giese-Davis, J., Hermanson, K., Koopman, C., Weibel, D., & Spiegel, D. (2000). Quality of couples' relationship and adjustment to metastatic breast cancer. *Journal of Family Psychology*, 14, 251–266.
- Harden, J., Schafenacker, A., Northouse, L., Mood, D., Smith, D., Pienta, K., et al. (2002). Couples' experience with prostate cancer: Focus group research. *Oncology Nursing Forum*, 29, 701–709.
- Harrod, H.L. (2003). A piece of my mind. An essay on desire. *JAMA*, 289, 813–814.
- Hu, J.C., Elkin, E.P., Pasta, D.J., Lubeck, D.P., Kattan, M.W., Carroll, P.R., et al. (2004). Predicting quality of life after radical prostatectomy: Results from CaPSURE. *Journal of Urology*, 171, 703–708.
- Incrocci, L., Slob, A.K., & Levendag, P.C. (2002). Sexual (dys)function after radiotherapy for prostate cancer: A review. *International Journal of Radiation Oncology, Biology, Physics*, 52, 681–693.
- Jakobsson, L., Hallberg, I.R., & Loven, L. (2000). Experiences of micturition problems, indwelling catheter treatment and sexual life consequences in men with prostate cancer. *Journal of Advanced Nursing*, 31, 59–67.
- Jani, A.B., & Hellman, S. (2003). Early prostate cancer: Clinical decision-making. *Lancet*, 361, 1045–1053.
- Jenkins, R., Schover, L.R., Fouladi, R.T., Warneke, C., Neese, L., Klein, E.A., et al. (2004). Sexuality and health-related quality of life after prostate cancer in African American and white men treated for localized disease. *Journal of Sex and Marital Therapy*, 30(2), 79–93.
- Khattree, R., & Naik, D.N. (1999). *Applied multivariate statistics with SAS software*. New York: John Wiley and Sons.
- Kim, E.D., Nath, R., Slawin, K.M., Kadmon, D., Miles, B.J., & Scardino, P.T. (2001). Bilateral nerve grafting during retropubic prostatectomy: Extended follow-up. *Urology*, 58, 983–987.
- King, C.R., Haberman, M., Berry, D.L., Bush, N., Butler, L., Dow, K.H., et al. (1997). Quality of life and the cancer experience: The state-of-the-knowledge. *Oncology Nursing Forum*, 24, 27–41.
- Kirschner-Hermanns, R., & Jakse, G. (2002). Quality of life following radical prostatectomy. *Critical Reviews in Oncology/Hematology*, 43, 141–151.
- Kiss, A., & Meryn, S. (2001). Effect of sex and gender on psychosocial aspects of prostate and breast cancer. *BMJ*, 323, 1055–1058.
- Lavery, J.F., & Clarke, V.A. (1999). Prostate cancer: Patients' and spouses' coping and marital adjustment. *Psychology, Health, and Medicine*, 4, 289–302.
- Lee, W.R., Hall, M.C., McQuellon, R.P., Case, L.D., & McCullough, D.L. (2001). A prospective quality-of-life study in men with clinically localized prostate carcinoma treated with radical prostatectomy, external beam radiotherapy, or interstitial brachytherapy. *International Journal of Radiation Oncology, Biology, Physics*, 51, 614–623.
- Lilleby, W., Fossa, S.D., Waehre, H.R., & Olsen, D.R. (1999). Long-term morbidity and quality of life in patients with localized prostate cancer undergoing definitive radiotherapy or radical prostatectomy. *International Journal of Radiation Oncology, Biology, Physics*, 43, 735–743.
- Litwin, M.S. (2003). Quality of life following definitive therapy for localized prostate cancer: Potential impact of multiple therapies. *Current Opinion in Urology*, 13, 153–156.
- Litwin, M.S., McGuigan, K.A., Shpall, A.I., & Dhanani, N. (1999). Recovery of health related quality of life in the year after radical prostatectomy: Early experience. *Journal of Urology*, 161, 515–519.
- Litwin, M.S., Melmed, G.Y., & Nakazon, T. (2001). Life after radical prostatectomy: A longitudinal study. *Journal of Urology*, 166, 587–592.
- Malcarne, V.L., Banthia, R., Varni, J.W., Sadler, G.R., Greenbergs, H.L., & Ko, C.M. (2002). Problem-solving skills and emotional distress in spouses of men with prostate cancer. *Journal of Cancer Education*, 17, 150–154.
- Maliski, S.L., Heilemann, M.V., & McCorkle, R. (2001). Mastery of post-prostatectomy incontinence and impotence: His work, her work, our work. *Oncology Nursing Forum*, 28, 985–992.
- McPherson, C.P., Swenson, K.K., & Kjellberg, J. (2001). Quality of life in patients with prostate cancer. *Seminars in Oncology Nursing*, 17, 138–146.
- Meuleman, E.J., & Mulders, P.F. (2003). Erectile function after radical prostatectomy: A review. *European Urology*, 43, 95–102.
- Meyer, J.P., Gillatt, D.A., Lockyer, R., & Macdonagh, R. (2003). The effect of erectile dysfunction on the quality of life of men after radical prostatectomy. *BJU International*, 92, 929–931.
- Minuchin, S. (1974). *Families and family therapy*. Cambridge, MA: Harvard University Press.
- Mirone, V., Imbimbo, C., Palmieri, A., Longo, N., & Fusco, F. (2003). Erectile dysfunction after surgical treatment. *International Journal of Andrology*, 26, 137–140.
- Moinpour, C.M., Hayden, K.A., Thompson, I.M., Feigl, P., & Metcal, B.

- (1990). Quality of life assesemnt in Southwest Oncology Group trials. *Oncology*, 4(5), 79–84, 89.
- Monturo, C.A., Rogers, P.D., Coleman, M., Robinson, J.P., & Pickett, M. (2001). Beyond sexual assessment: Lessons learned from couples post-radical prostatectomy. *Journal of the American Academy of Nurse Practitioners*, 13, 511–516.
- Morse, S.R., & Fife, B. (1998). Coping with a partner's cancer: Adjustment at four stages of the illness trajectory. *Oncology Nursing Forum*, 25, 751–760.
- Mullan, F. (1985). Seasons of survival: Reflections of a physician with cancer. *New England Journal of Medicine*, 313, 270–273.
- Navon, L., & Morag, A. (2003). Advanced prostate cancer patients' relationships with their spouses following hormonal therapy. *European Journal of Oncology Nursing*, 7(2), 73–80.
- Neese, L.E., Schover, L.R., Klein, E.A., Zippe, C., & Kupelian, P.A. (2003). Finding help for sexual problems after prostate cancer treatment: A phone survey of men's and women's perspectives. *Psycho-Oncology*, 12, 463–473.
- Northouse, L.L., Templin, T., Mood, D., & Oberst, M. (1998). Couples' adjustment to breast cancer and benign disease: A longitudinal analysis. *Psycho-Oncology*, 7, 37–48.
- Padilla, G.V., Mishel, M.H., & Grant, M.M. (1992). Uncertainty, appraisal and quality of life. *Quality of Life Research*, 1, 155–165.
- Padilla, G.V., Presant, C., Grant, M.M., Metter, G., Lipsett, J., & Heide, J. (1983). Quality of life index for patients with cancer. *Research in Nursing and Health*, 6, 117–126.
- Penson, D.F., & Litwin, M.S. (2003a). The physical burden of prostate cancer. *Urologic Clinics of North America*, 30, 305–313.
- Penson, D.F., & Litwin, M.S. (2003b). Quality of life after treatment for prostate cancer. *Current Urology Reports*, 4, 185–195.
- Penson, D.F., Litwin, M.S., & Aaronson, N.K. (2003). Health related quality of life in men with prostate cancer. *Journal of Urology*, 169, 1653–1661.
- Perez, M.A., Skinner, E.C., & Meyerowitz, B.E. (2002). Sexuality and intimacy following radical prostatectomy: Patient and partner perspectives. *Health Psychology*, 21, 288–293.
- Peschel, R.E., & Colberg, J.W. (2003). Surgery, brachytherapy, and external-beam radiotherapy for early prostate cancer. *Lancet Oncology*, 4, 233–241.
- Pickles, T. (2004). What's a man to do: Treatment options for localized prostate cancer. *Canadian Family Physician*, 50, 65–72.
- Ponholzer, A., Struhal, G., & Madersbacher, S. (2003). Frequent use of complementary medicine by prostate cancer patients. *European Urology*, 43, 604–608.
- Potosky, A.L., Legler, J., Albertsen, P.C., Stanford, J.L., Gilliland, F.D., Hamilton, A.S., et al. (2000). Health outcomes after prostatectomy or radiotherapy for prostate cancer: Results from the Prostate Cancer Outcomes Study. *Journal of the National Cancer Institute*, 92, 1582–1592.
- Ptacek, J.T., Pierce, G.R., & Ptacek, J.J. (2002). The social context of coping with prostate cancer. *Journal of Psychosocial Oncology*, 20, 61–80.
- Robinson, J.W., Donnelly, B.J., Saliken, J.C., Weber, B.A., Ernest, S., & Rewcastle, J.C. (2002). Quality of life and sexuality of men with prostate cancer 3 years after cryosurgery. *Urology*, 60(2, Suppl. 1), 12–18.
- Schover, L.R., Fouladi, R.T., Warneke, C.L., Neese, L., Klein, E.A., Zippe, C., et al. (2002a). Defining sexual outcomes after treatment for localized prostate cancer. *Cancer*, 95, 1773–1785.
- Schover, L.R., Fouladi, R.T., Warneke, C.L., Neese, L., Klein, E.A., Zippe, C., et al. (2002b). The use of treatments for erectile dysfunction among survivors of prostate cancer. *Cancer*, 95, 2397–2407.
- Schwartz, C.E., Covino, N.M., Morgentaler, A., & DeWolf, W. (2000). Quality of life after penile prosthesis placed at radical prostatectomy. *Psychology and Health*, 15, 651–661.
- Sestini, A.J., & Pakenham, K.I. (2000). Cancer of the prostate: A biopsychosocial review. *Journal of Psychosocial Oncology*, 18, 17–38.
- Shields, C.G., Travis, L.A., & Rousseau, S.L. (2000). Marital attachment and adjustment in older couples coping with cancer. *Aging and Mental Health*, 4, 223–233.
- Shrader-Bogen, C.L., Kjellberg, J.L., McPherson, C.P., & Murray, C.L. (1997). Quality of life and treatment outcomes: Prostate carcinoma patients' perspectives after prostatectomy or radiation therapy. *Cancer*, 79, 1977–1986.
- Skerrett, K. (2003). Couple dialogues with illness: Expanding the "we." *Families, Systems and Health*, 21(1), 69–80.
- Slater, J.D., Rossi, C.J., Jr., Yonemoto, L.T., Reyes-Molyneux, N.J., Bush, D.A., Antoine, J.E., et al. (1999). Conformal proton therapy for early-stage prostate cancer. *Urology*, 53, 978–984.
- Spanier, G.B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*, 38(1), 15–28.
- Sprangers, M.A. (1996). Response-shift bias: A challenge to the assessment of patients' quality of life in cancer clinical trials. *Cancer Treatment Reviews*, 22(Suppl. A), 55–62.
- Steineck, G., Helgesen, F., Adolfsson, J., Dickman, P.W., Johansson, J.E., Norlen, B.J., et al. (2002). Quality of life after radical prostatectomy or watchful waiting. *New England Journal of Medicine*, 347, 790–796.
- Stewart, A.L., Hays, R.D., & Ware, J.E., Jr. (1988). The MOS short-form general health survey. Reliability and validity in a patient population. *Medical Care*, 26, 724–735.
- Talcott, J.A. (2003). New era in prostate-cancer care: What we know and what we don't. *Lancet Oncology*, 4, 204–205.
- Talcott, J.A., Rieker, P., Clark, J.A., Propert, K.J., Weeks, J.C., Beard, C.J., et al. (1998). Patient-reported symptoms after primary therapy for early prostate cancer: Results of a prospective cohort study. *Journal of Clinical Oncology*, 16, 275–283.
- Touijer, A.K., & Guillonneau, B. (2004). Laparoscopic radical prostatectomy. *Urologic Oncology*, 22, 133–138.
- Turini, M., Redaelli, A., Gramegna, P., & Radice, D. (2003). Quality of life and economic considerations in the management of prostate cancer. *Pharmacoeconomics*, 21, 527–541.
- Van Andel, G., Visser, A.P., Hulshof, M.C., Horenblas, S., & Kurth, K.H. (2003). Health-related quality of life and psychosocial factors in patients with prostate cancer scheduled for radical prostatectomy or external radiation therapy. *British Journal of Urology International*, 92, 217–222.
- Wai-Ming, V.M. (2002). Psychological predictors of marital adjustment in breast cancer patients. *Psychology, Health, and Medicine*, 7(1), 37–51.
- Wallace, M., Bailey, D., Jr., O'Rourke, M., & Galbraith, M.E. (2004). The watchful waiting management option for older men with prostate cancer: State of the science. *Oncology Nursing Forum*, 31, 1057–1064.
- Walsh, P.C., Marschke, P., Ricker, D., & Burnett, A.L. (2000). Patient-reported urinary continence and sexual function after anatomic radical prostatectomy. *Urology*, 55, 58–61.
- Wei, J.T., Dunn, R.L., Sandler, H.M., McLaughlin, P.W., Montie, J.E., Litwin, M.S., et al. (2002). Comprehensive comparison of health-related quality of life after contemporary therapies for localized prostate cancer. *Journal of Clinical Oncology*, 20, 557–566.
- Wilson, I.B., & Cleary, P.D. (1995). Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes. *JAMA*, 273, 59–65.
- Yarbro, C.H., & Ferrans, C.E. (1998). Quality of life of patients with prostate cancer treated with surgery or radiation therapy. *Oncology Nursing Forum*, 25, 685–693.
- Yonemoto, L.T., Slater, J.D., Rossi, C.J., Jr., Antoine, J.E., Lored, L., Archambeau, J.O., et al. (1997). Combined proton and photon conformal radiation therapy for locally advanced carcinoma of the prostate: Preliminary results of a phase I/II study. *International Journal of Radiation Oncology, Biology, Physics*, 37, 21–29.
- Zelevsky, M.J., & Eid, J.F. (1998). Elucidating the etiology of erectile dysfunction after definitive therapy for prostate cancer. *International Journal of Radiation Oncology, Biology, Physics*, 40, 129–133.
- Zietman, A.L. (2002). Localized prostate cancer: Brachytherapy. *Current Treatment Options in Oncology*, 3, 429–436. 