

Body Image Perceptions in Men With Prostate Cancer

Joanne M. Harrington, PhD, AOCNP®, APRN-C, Elaine G. Jones, PhD, RN, and Terry Badger, PhD, RN, FAAN

Prostate cancer is the second most common type of cancer among men in the United States, after skin cancer. The American Cancer Society (ACS) estimated that more than 186,320 new cases of prostate cancer were diagnosed in the United States in 2008 (Jemal et al., 2008), representing 33% of all new cancer diagnoses among men in that year. Although the numbers of men affected—one in six—are almost overwhelming, mortality is relatively low: Only one in 35 men will die of the disease. Also, mortality figures for prostate cancer are decreasing (ACS, 2007b; Jemal et al.). The difference between incidence and mortality is large, ensuring that men with prostate cancer comprise a significant percentage of the cancer survivor population (Jemal et al.). Prostate cancer is a chronic illness that threatens the health and well-being of a substantial proportion of older men (Lepore, Helgeson, Eton, & Schulz, 2003).

Background

The treatment options for prostate cancer (based on the stage or extent of the cancer, the age of the man, and his associated comorbidities) are surgery, radiation therapy, androgen-deprivation (hormonal) therapy (ADT), and watchful waiting (National Cancer Institute [NCI], 2005). More than 50 years ago, Huggins and colleagues documented the dependence of the prostate gland upon androgens. Androgens are important in growth regulation of the prostate gland and in the pathogenesis of prostate cancer (Denis & Griffiths, 2000; Rashid & Chaudhary, 2004). Hormonal therapy is designed to interrupt the supply of testosterone to prostate cancer cells, thus interfering with their growth. ADT (generally achieved with administration of a gonadotropin-releasing hormone agonist), remains a well-established treatment option for men with metastatic or locally advanced disease, as an adjuvant to local therapy, and in cases of prostate-specific antigen (PSA)-only occurrence (Sharifi, Gulley, & Dahut, 2005). However, inducing castration levels of testoster-

Purpose/Objectives: To describe changes in body image among men with prostate cancer who were either prescribed androgen-deprivation therapy (ADT) or were ADT naive and to explore the relationship of age, duration of therapy, and body mass index with body image perception.

Design: Exploratory and descriptive.

Setting: Ambulatory care clinic of a large urban Veterans Affairs medical center.

Sample: 132 men 60 years of age or older with prostate cancer recruited from the oncology and urology outpatient departments.

Methods: Participants completed a demographic survey and the Body Image Scale (BIS), an instrument developed to measure changes in body image. Descriptive and inferential statistics were used to explore body image dissatisfaction.

Main Research Variables: Body image and ADT.

Findings: A significant difference in body image dissatisfaction existed between men who had received ADT and men who were ADT naive. No relationship was identified between age and body image dissatisfaction or between duration of therapy and body image dissatisfaction. A significant positive relationship was found between body mass index and body image dissatisfaction for the sample overall.

Conclusions: A greater degree of body image dissatisfaction existed in the men who received ADT as compared to those who were ADT naive.

Implications for Nursing: Patients receiving ADT for prostate cancer may be at greater risk of body image dissatisfaction. The psychometric performance of the BIS lends support to its continued use in this population.

one with ADT is not without significant deleterious side effects. ADT contributes to osteoporosis, anemia, loss of muscle mass, weight gain, decrease in high-density lipid cholesterol, and subjective complaints of breast tenderness and enlargement, hot flashes, decreased cognitive function, fatigue, and depression (ACS, 2007a; Higano, 2003; O'Connor & Fitzpatrick, 2006). Additionally, patients experience significant sexual side effects from

the therapy, including decreased libido and impotence (O'Connor & Fitzpatrick). Higano reported loss of penile length or volume in addition to loss of testicular mass. Given the association between ADT-induced physical changes and sexuality and body image (Fan, 2002; Pelusi, 2006; Smith & Reilly, 1994), significant alterations in body image may occur as sequelae of ADT (Held, Osborne, Volpe, & Waldman, 1994). Although treatment with ADT leads to tumor regression and symptom improvement, the deleterious side effects (NCI, 2008) lead to significant changes in physical appearance and function. Despite the profound changes secondary to ADT, little research has examined the effects of long-term ADT on body image.

Literature Review

Body image was defined succinctly by Dropkin (1999) as "the dynamic perception of one's own bodily appearance, function, and sensations as well as feelings associated with this perception. It occurs largely at a subconscious level and is normally regulated by the condition of the body" (p. 310). The limited evidence about body image concerns in men with prostate cancer has emerged from qualitative studies exploring the treatment-related experience of prostate cancer among men or their spouses. Analysis of data from interviews conducted by Hedestig, Sandman, Tomic, and Widmark (2005) and Oliffe (2005) documented the importance of the appearance of the body. The participants in the Hedestig et al. study undergoing external beam radiation therapy expressed feelings of exposure and mutilation that were identified with waning erectile ability; additionally, the self-perception of a "little penis" led to an unwillingness to expose the body. Oliffe conducted semistructured interviews with 15 Australian men after prostatectomy. The participants reported distress and surprise at postsurgical penile changes. The authors observed that the finding illuminated a discrepancy between the presurgical discussion that occurs prior to mastectomy in women with breast cancer and the presurgical discussion that occurs prior to prostatectomy in men with prostate cancer.

Navon and Morag (2003) and Harden et al. (2002) explored the effects of hormonal therapy on spousal relationships. The 15 Israeli men interviewed by Navon and Morag reported hormone-induced changes in personality and bodily appearance that created emotional distance in spousal relationships. In addition, the men attributed lack of masculine coping skills and "disgust" with their bodies to the effects of the hormonal therapy. Harden et al. found similar effects of hormonal therapy on spousal relationships in analysis of focus group data: Men attributed a loss of power secondary to the hormones, and women reported a decreased sense of femininity as husbands lost interest in them as sexual partners.

The effects of hormonal therapy on body image were further documented in a qualitative study conducted by Chapple and Ziebland (2002) involving 52 prostate cancer survivors. Profound effects on libido, energy, body shape, ability to work, and competitiveness were reported by men receiving hormonal therapy. Additionally, participants reported a perceived loss of masculinity secondary to impotence, decreased libido, and breast enlargement. The authors asserted that the effects of illness on the physical body must be considered.

DeFrank, Mehta, Stein, and Baker (2007) explored medical and psychosocial factors associated with body image dissatisfaction in cancer survivors. Body image dissatisfaction was measured with the Appearance Evaluation Subscale of the Multidimensional Body Self-Relations Questionnaire (DeFrank et al.). Survivors of prostate cancer ($n = 104$) comprised 25% of the sample. The findings of the study revealed less body image dissatisfaction among prostate cancer survivors as compared to men with other malignancies. A positive relationship was found between poorer mental health scores and poorer body image. DeFrank et al. did not explore body image dissatisfaction in prostate cancer survivors based on type of treatment. Through exploration of the relationship between body image dissatisfaction and type of treatment, the present study fills a gap in the literature.

The purpose of the current study was to describe changes in body image among men with prostate cancer and to describe differences in body image based on whether they had been receiving ADT or were ADT naive. Age, body mass index (BMI), and duration of therapy also were explored as variables that might influence body image perception.

Methods

The study used an exploratory, descriptive, nonexperimental design. Inclusion criteria included a diagnosis of prostate cancer, ability to read and write English, and age older than 60 years. The only exclusion criterion was a diagnosis of a significant cognitive comorbidity, such as Alzheimer dementia.

Procedure

The study was approved by the institutional review boards of the sponsoring university and Veterans Affairs medical center. Men with prostate cancer were recruited from the outpatient oncology and urology departments as they presented for their scheduled visits. They were informed of the study by staff and by posted advertising flyers in the clinic areas. Potential participants were offered an immediate or delayed meeting with the principal investigator (PI) for screening, discussion, and informed consent. Those who elected to defer participation returned the flyer with contact information into des-

igned locked boxes. Flyers were collected daily by the PI, with follow-up phone calls to answer questions and determine appointment times to obtain consent. Upon completion of informed consent, participants completed study instruments. Disease-related information was gathered through chart reviews.

Instruments

Demographic and disease-related data: Sociodemographic and disease-related information was collected via two instruments designed for that purpose. Sociodemographic information included age, ethnicity, education, and marital and employment status. Disease-related information included date and stage at diagnosis, initial and current therapy, date of initial therapy, and BMI.

Body image: The **Body Image Scale (BIS)**, constructed in collaboration with the European Organisation for Research and Treatment of Cancer (EORTC) Quality-of-Life Study Group, is a 10-item scale developed to measure changes in body image in patients with cancer (Hopwood, Fletcher, Lee, & Al Ghazal, 2001). Responses range from 0 (not at all) to 3 (very much). Researchers calculate BIS scores by adding the score obtained on each item, yielding a range of possible scores from 0–30. Higher scores indicate a greater degree of body image dissatisfaction. Cronbach alpha for the BIS (with item number 10, [referent to appearance of scar], “not applicable” coded as “0”) was 0.89.

Analysis

To explore the effect of treatment on body image, the sample was divided into two groups: those who had received ADT (ever-ADT) and those who had never received ADT (ADT naive). Differences were tested with t tests and chi-square, and Pearson correlations were used to identify relationships based on treatment, age, duration of therapy, BMI, and scores on the BIS.

Results

Sample

Demographic and disease-related characteristics are illustrated in Table 1. One hundred thirty-two men, representing all four stages of prostate cancer, participated in the study. The mean age was 73 years (range = 60–91). Non-Hispanic Caucasian men comprised 75% of the sample; 56%

were married; 75% were retired. Most of the sample (83%) had education at the high school level or higher. The greatest proportion of men received ADT after failure of primary therapy (n = 38); only 7 participants were on watchful waiting. Equal numbers of participants received ADT as primary therapy (n = 29) or neoadjuvant (n = 29) therapy. Participants also included men who had received or were receiving external beam radiation therapy or brachytherapy without ADT (n = 22) and those men for whom prostatectomy was the treatment choice (n = 7). Two-thirds of the sample (n = 87, 66%) had received or were receiving ADT; 34% (n = 45) were ADT naive. No significant differences existed between the two groups for age, race, ethnicity, education, employment, or marital status.

Body Image Dissatisfaction

The mean score for the sample overall was 6.13 (based upon a possible total score of 30). The highest means per individual items (scored 0–3) were noted for items referring to a perceived change in sexual attractiveness (1.15), masculinity (0.91), feeling less whole (0.9), and dissatisfaction with body (0.77). Mean responses to the BIS, for each group, are found in Table 2. Significant differences were found for perceived body image between the two groups ($t[126] = -2.623, p = 0.01$). The mean of the ever-ADT group was higher ($\bar{X} = 2.23, SD = 1.44$)

Table 1. Demographic Data Group Comparisons

Variable	Ever-ADT (n = 87)			ADT Naive (n = 45)		
	\bar{X}	SD	Range	\bar{X}	SD	Range
Age (years)	74	7.93	60–91	71.73	7.21	60–88
Variable	n	%	n	%		
Marital status						
Married or partnered	48	55	26	58		
Single	39	45	19	42		
Race						
Native American	3	3	–	–		
African American	11	13	5	11		
Hawaiian	1	1	–	–		
Caucasian	68	78	38	84		
Missing data	4	5	2	4		
Ethnicity						
Hispanic	11	13	4	9		
Non-Hispanic	73	84	41	91		
Missing data	3	3	–	–		
Employment						
Full- or part-time	16	18	14	31		
Retired or unemployed	71	82	31	69		
Education						
Less than a high school diploma	51	59	22	49		
13–15 years	24	28	17	38		
16 years or more	12	14	6	13		

ADT—androgen-deprivation therapy; Ever-ADT—those who had received ADT
Note. Because of rounding, not all percentages total 100.

than the mean of the ADT-naive group ($\bar{X} = 1.52$, $SD = 1.44$), indicating greater dissatisfaction with body image among men receiving ADT when compared with the ADT-naive sample.

Perceived Body Image Change and Age, Duration of Therapy, and Body Mass Index

In this study, the mean duration of therapy was 40.5 months (range = 0–240 months). The mean BMI scores were almost identical for the sample overall, the ever-ADT group, and the ADT-naive group: 28.55, 28.51, and 28.64, respectively. No significant relationships were found between body image dissatisfaction and age ($t[126] = -0.146$, $p = 0.1$) or for duration of therapy in men receiving ADT ($t[83] = 0.166$, $p = 0.13$). A statistically significant (positive) correlation occurred between body image dissatisfaction and BMI ($t[125] = 0.174$, $p = 0.05$), with a greater degree of body image dissatisfaction related to higher BMI. The relationship between BIS score and BMI was significant only in the total sample; it was not significant in either the ever-ADT group or the ADT-naive group.

Discussion

The present study explored body image changes in men with prostate cancer and evaluated the relationship between body image and treatment, age, duration of therapy, and BMI. The findings demonstrate a significantly greater degree of body image dissatisfaction in men who receive ADT than men who are ADT naive. This is not unexpected given the physical changes that take place secondary to the ADT-induced hypogonadal state.

Participants' BIS scores did not differ substantially from those obtained in other studies with cancer survivors of diverse diagnoses. The mean BIS score obtained in the current study was 6.13 (range = 0–27); in a heterogeneous sample of 276 British patients with cancer, means ranged from 6.06–13.67; in women with breast cancer who had undergone various surgical approaches, means ranged from 4.27 (overall) to 14.22 (mastectomy) (Hopwood et al., 2001).

Although no clinical threshold for body image disturbance exists, Hopwood et al. (2000) suggested that a score of 10 on the BIS might serve as a clinical cut-off indicating dissatisfaction with body image. Nearly twice as many men in the ever-ADT group, compared to the ADT-naive group, received a score higher than 10 (27% and 14%, respectively). Additionally, more than twice as many men in the ADT-naive group indicated an absence of body image change related to treatment as compared with the ever-ADT group (39% and 16%, respectively). The findings provide additional support for the presence of a meaningful degree of body image disturbance, particularly among men who receive ADT.

Table 2. Mean Total and Item Scores on Body Image Scale

Item	Ever-ADT	ADT Naive
Self-conscious about appearance	0.6207	0.4773
Less physically attractive	0.7931	0.3409
Dissatisfied with appearance when dressed	0.5057	0.3182
Less masculine	1.046	0.6364
Difficult to look at oneself naked	0.5057	0.2045
Less sexually attractive	1.2414	0.9767
Avoidance of people because of appearance	0.2069	0.1818
Feeling less whole	1.0233	0.6591
Dissatisfied with body	0.9425	0.4318
Dissatisfied with appearance of scar	0.093	0.0682
Total Body Image Scale	6.9655	4.2727

ADT—*androgen-deprivation therapy*; Ever-ADT—*those who had received ADT*

Note. Individual body image scale scores range from 0–3. Total body image scale scores range from 0–30.

The lack of a relationship between age and body image change, in light of existing literature (Holly, Kennedy, Taylor, & Beedie, 2003; Iredale, Brain, Williams, France, & Gray, 2006), was somewhat surprising. Younger men with breast cancer were found to have a greater degree of body image alteration than older men with breast cancer (Iredale et al.). Similar findings emerged from several studies of women with breast cancer (Holly et al.; Hopwood et al., 2001). The lack of relationship with age found in the current study may be a result of lack of variability; no participants were younger than 60 years.

The authors are not aware of any studies that explored duration of therapy and perception of body image. Although Greenspan et al. (2005) evaluated the deleterious effects of ADT on body composition over time in a 12-month prospective study, the effect of the changes on participants' body image was not examined. The authors reported maximal changes (increased body fat and decreased total lean mass) occurring during the first year of therapy. Given the trend toward intermittent therapy, this topic is worthy of further exploration. Although not yet established, benefits of intermittent therapy are expected to include a reduction in the deleterious side-effect profile. However, given the findings of this study, the cyclic cessation and restart of ADT may actually increase the deleterious effects upon body

composition. Another potential factor contributing to the lack of correlation between body image and duration of therapy in the current study was the great diversity of ADT administration received by men in the ever-ADT group. Participants were captured at various time points in their illness trajectory. Inability to see a relationship between duration of therapy and body image likely was influenced by this heterogeneity.

A relationship was found between BMI and body image satisfaction only in the overall sample. Contrary to expectations, BMI values were not greater among men receiving ADT as compared to men who were ADT naive. Perhaps the variability in ADT administration resulted in less consistent effects upon adiposity, lean body mass, and weight. Additionally, BMI may be a less valid indicator of adiposity with advancing age. The results of a study by Gallagher et al. (1996) suggested that BMI was age and gender dependent: At a comparable BMI, older adults tend to have more body fat than younger adults. In underestimating adiposity, BMI may have been a less than valid measurement of body fat.

An additional finding to emerge from the data was the degree of negative change in sexuality and masculinity. This supports the assertion that prostate cancer affects body image through sexuality and masculinity. The highest means achieved, for both treatment groups, were on items referent to sexuality and masculinity: More than 50% of the participants indicated a negative change in sexuality (54%) and masculinity (57%). This is consistent with the model offered by Mock (1993) wherein sexuality was conceptualized as a component of body image.

Implications

Few quantitative studies have explored the effect of treatment on body image in men with prostate cancer. The findings of the current study add to the limited body of knowledge. In the current sample, a greater degree of body image dissatisfaction existed among men who received ADT currently or at some time in the trajectory of care for their cancer. That group of men may be at risk for body image disturbance. Exploration into this remarkably under-researched area of prostate cancer survivorship is warranted; additionally, further research is needed to more fully elucidate the sequelae of body image disturbance. Such information will allow for future development of nursing interventions designed to mitigate dissatisfaction.

Interventions such as exercise have been shown to increase physical self-worth and body esteem. Taylor and Fox (2005) studied the effect of an exercise intervention in participants aged 40–70 years. Those randomized to an exercise intervention demonstrated evidence of greater physical self-worth, physical condition, and

physical health when compared to participants in the control group. Breast cancer survivors who reported regular physical exercise demonstrated greater body esteem as compared with sedentary breast cancer survivors (Pinto & Trunzo, 2004). The studies provide preliminary evidence as to the efficacy of an exercise intervention to mitigate dissatisfaction with body image.

Segal et al. (2003) randomized men who were receiving ADT for prostate cancer to an exercise intervention study or usual care. The intervention group participated in a 12-week resistance exercise program. The study did not demonstrate a significant change in body composition related to participation in exercise; however, in comparison to the usual care group, those in the exercise group demonstrated less fatigue, higher quality of life, and higher levels of upper- and lower-body muscular fitness than those in the control group. The findings are intriguing and worthy of further investigation.

In addition to exercise programs, the inclusion of nutritional services could be of benefit in an effort to decrease weight gain associated with treatment. A combined program of nutritional counseling and exercise has the potential to affect not only treatment-induced weight gain, but also other associated sequelae of ADT, such as the development of metabolic syndrome and osteoporosis.

Lastly, nursing must address anticipated changes in sexuality with the development of counseling, education, and support programs for men and their partners. Treatment for prostate cancer and corresponding changes in body image deeply affect sexuality. Studies by Harden et al. (2002) and Navon and Morag (2003) attest to changes experienced in the spousal relationship, making prostate cancer truly a “couple’s disease.” In addition, nurses may initiate appropriate referrals to erectile dysfunction specialists.

An additional important finding of the current study was the performance of the BIS as an instrument to measure body image change in this population. The acceptable psychometric properties demonstrated lend support to the continued use of this instrument in men with prostate cancer. The ability to assess body image change and diagnose body image dissatisfaction will allow for future evaluation of programs designed to alleviate body image dissatisfaction in this large population of cancer survivors.

Joanne M. Harrington, PhD, AOCNP®, APRN-C, is a nurse practitioner in the Hematology-Oncology Division of the Phoenix Veterans Administration Health Care System in Arizona; and Elaine G. Jones, PhD, RN, is an associate professor, and Terry Badger, PhD, RN, FAAN, is a professor and the division director of systems, both in the College of Nursing at the University of Arizona in Tucson. No financial relationships to disclose. Harrington can be reached at joanne.harrington@va.gov, with copy to editor at ONFEditor@ons.org. (Submitted February 2008. Accepted for publication June 19, 2008.)

Digital Object Identifier: 10.1188/09.ONF.167-172

References

- American Cancer Society. (2007a). Overview: Prostate cancer. How is prostate cancer treated? Retrieved January 7, 2008, from http://www.cancer.org/docroot/CRI/content/CRI_2_2_4X_how_is_prostate_cancer_treated_36.asp?rnav=cri
- American Cancer Society. (2007b). Overview: Prostate cancer. How many men get prostate cancer? Retrieved January 7, 2008, from http://www.cancer.org/docroot/CRI/content/CRI_2_2_1X_How_many_men_get_prostate_cancer_36.asp?rnav=cri
- Chapple, A., & Ziebland, S. (2002). Prostate cancer: Embodied experience and perceptions of masculinity. *Sociology of Health and Illness*, 24(6), 820–841.
- DeFrank, J.T., Mehta, C.B., Stein, K.D., & Baker, F. (2007). Body image dissatisfaction in cancer survivors [Online exclusive]. *Oncology Nursing Forum*, 34(3), E36–E41. Retrieved January 26, 2009, from <http://www.ons.org/Publications/journals/ONF/Volume34/Issue3/3403625.asp>
- Denis, L.J., & Griffiths, K. (2000). Endocrine treatment in prostate cancer. *Seminars in Surgical Oncology*, 18(1), 52–74.
- Dropkin, M.J. (1999). Body image and quality of life after head and neck cancer surgery. *Cancer Practice*, 7(6), 309–313.
- Fan, A. (2002). Psychological and psychosocial effects of prostate cancer. *Nursing Standard*, 17(13), 33–37.
- Gallagher, D., Visser, M., Sepulveda, D., Pierson, R.N., Harris, T., & Heymsfield, S.B. (1996). How useful is body mass index for comparison of body fatness across age, sex, and ethnic groups? *American Journal of Epidemiology*, 143(3), 228–239.
- Greenspan, S.L., Coates, P., Sereika, S.M., Nelson, J.B., Trump, D.L., & Resnick, N.M. (2005). Bone loss after initiation of androgen deprivation therapy in patients with prostate cancer. *Journal of Clinical Endocrinology and Metabolism*, 90(12), 6410–6417.
- Harden, J., Schafenacker, A., Northouse, L., Mood, D., Smith, D., Pienta, K., et al. (2002). Couples' experiences with prostate cancer: Focus group research. *Oncology Nursing Forum*, 29(4), 701–709.
- Hedestig, O., Sandman, P.O., Tomic, R., & Widmark, A. (2005). Living after external beam radiotherapy of localized prostate cancer: A qualitative analysis of patient narratives. *Cancer Nursing*, 28(4), 310–317.
- Held, J.L., Osborne, D.M., Volpe, H., & Waldman, A.R. (1994). Cancer of the prostate: Treatment and nursing implications. *Oncology Nursing Forum*, 21(9), 1517–1529.
- Higano, C.S. (2003). Side effects of androgen deprivation therapy: Monitoring and minimizing toxicity. *Urology*, 61(2, Suppl. 1), 32–38.
- Holly, P., Kennedy, P., Taylor, A., & Beedie, A. (2003). Immediate breast reconstruction and psychological adjustment in women who have undergone surgery for breast cancer: A preliminary study. *Psychology, Health and Medicine*, 8(4), 441–452.
- Hopwood, P., Fletcher, I., Lee, A., & Al Ghazal, S. (2001). A body image scale for use with cancer patients. *European Journal of Cancer*, 37(2), 189–197.
- Hopwood, P., Lee, A., Shenton, A., Baildam, A., Brain, A., Lalloo, F., et al. (2000). Clinical follow-up after bilateral risk reducing ("prophylactic") mastectomy: Mental health and body image outcomes. *Psycho-Oncology*, 9(6), 462–472.
- Iredale, R., Brain, K., Williams, B., France, E., & Gray, J. (2006). The experiences of men with breast cancer in the United Kingdom. *European Journal of Cancer*, 42(3), 334–341.
- Jemal, A., Siegel, R., Ward, E., Hao, Y., Xu, J., Murray, T., et al. (2008). Cancer statistics, 2008. *CA: A Cancer Journal for Clinicians*, 58(2), 71–96.
- Lepore, S.J., Helgeson, V.S., Eton, D.T., & Schulz, R. (2003). Improving quality of life in men with prostate cancer: A randomized controlled trial of group education interventions. *Health Psychology*, 22(5), 443–452.
- Mock, V. (1993). Body image in women treated for breast cancer. *Nursing Research*, 42(3), 153–157.
- National Cancer Institute. (2005). What You Need to Know About™ prostate cancer. Second opinion. Retrieved June 20, 2006, from <http://www.cancer.gov/cancertopics/wyntk/prostate/page9>
- National Cancer Institute. (2008). Prostate cancer treatment (PDQ®). Treatment option overview. Retrieved February 4, 2009, from <http://www.nci.nih.gov/cancertopics/pdq/treatment/prostate/HealthProfessional/page5>
- 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.
- O'Connor, K.M., & Fitzpatrick, J.M. (2006). Side effects of treatments for locally advanced prostate cancer. *BJU International*, 97(1), 22–28.
- Oliffe, J. (2005). Constructions of masculinity following prostatectomy-induced impotence. *Social Science and Medicine*, 60(10), 2249–2259.
- Pelusi, J. (2006). Sexuality and body image. *American Journal of Nursing*, 106(3, Suppl.), 32–38.
- Pinto, B.M., & Trunzo, J.J. (2004). Body esteem and mood among sedentary and active breast cancer survivors. *Mayo Clinic Proceedings*, 79(2), 181–186.
- Rashid, M.H., & Chaudhary, U.B. (2004). Intermittent androgen deprivation therapy for prostate cancer. *Oncologist*, 9(3), 295–301.
- Segal, R.J., Reid, R.D., Courneya, K.S., Malone, S.C., Parliament, M.B., Scott, C.G., et al. (2003). Resistance exercise in men receiving androgen deprivation therapy for prostate cancer. *Journal of Clinical Oncology*, 21(9), 1653–1659.
- Sharifi, N., Gulley, J.L., & Dahut, W.L. (2005). Androgen deprivation therapy for prostate cancer. *JAMA*, 294(2), 238–244.
- Smith, N., & Reilly, G. (1994). Sexuality and body image: The challenges facing male and female cancer patients. *Canadian Journal of Human Sexuality*, 3(2), 145–149.
- Taylor, A.H., & Fox, K.R. (2005). Effectiveness of a primary care exercise referral intervention for changing physical self-perceptions over nine months. *Health Psychology*, 24(1), 11–21.