# Depression in Men With Prostate Cancer

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**Purpose/Objectives:** To summarize the current empirical knowledge base on depression in men with prostate cancer to inform psychosocial supportive care interventions for this population and chart directions for future research.

**Data Sources:** Reports in English of quantitative studies that included measures of depression or mood in samples of men with prostate cancer published from 1988–2004.

**Data Synthesis:** Nurse researchers are playing a key role in establishing the scientific knowledge base upon which a better understanding of the relative importance of depression in men with prostate cancer will emerge. This review indicates that (a) predictable risk factors exist for depression among men with prostate cancer, (b) different prostate cancer treatments do not tend to be associated with differential outcomes in depression or mood, and (c) overall, men with prostate cancer report fewer depressive symptoms than women with breast cancer.

**Conclusions:** The small body of research addressing depression in men with prostate cancer is methodologically inadequate to estimate the overall prevalence of depression among men with prostate cancer and determine the clinical significance of psychoeducational interventions targeting depression or mood in this population.

**Implications for Nursing:** Nurses can use current knowledge to identify men with prostate cancer who are most at risk for depression. Evidence supporting the benefit of psychoeducational interventions for depression in other cancer populations (e.g., women with breast cancer) may be applicable to men with prostate cancer.

## Key Points . . .

- The number of studies focused on depression in men with prostate cancer is small in comparison to similar studies conducted with a focus on women with breast cancer.
- Men with prostate cancer most at risk for depressive symptoms include those with advanced disease, prominent cancer symptoms and side effects of treatment, and a history of clinical depression.
- Shortcomings in the empirical knowledge concerning depression in men with prostate cancer are being addressed by a marked increase in research beginning in the mid-1990s.

Prostate cancer is the most common potentially life-threatening cancer among men in the United States, with African American men having the highest prostate cancer rates in the world (Stanford et al., 1999; U.S. Cancer Statistics Working Group, 2002). Prostate cancer ranks second to lung cancer as the most common cause of cancer death among U.S. men across all racial and ethnic populations (American Cancer Society, 2005; Howe et al., 2001). Although incidence rates have been declining since 1993, the number of men and their significant others affected by prostate cancer and its diagnosis and treatment is increasing. This trend is the result of the combined impact of widespread adoption of prostate-specific antigen screening, increased survival rates, and the overall growth and aging of the U.S. population (Edwards et al., 2002). An estimated 232,090 new prostate cancer cases and 30,350 deaths are expected in 2005 (American Cancer Society).

Prostate cancer symptoms and side effects of treatment may include pain, fatigue, and impairment in urinary and sexual functioning. As a result, in addition to mortality concerns, men with prostate cancer are at risk for psychological distress (Kunkel, Bakker, Myers, Oyesanmi, & Gomella, 2000). The prevalence of psychological distress in this population has been reported as high as 31% (Zabora, Brintzenhofeszoc, Curbow, Hooker, & Piantadosi, 2001). The clinical significance of psychological distress, particularly depression, experienced by men with prostate cancer has yet to be addressed adequately in the research literature. Few studies have empirically examined the prevalence of depression in men with prostate cancer. Similarly, few experimental studies have tested the effectiveness of interventions targeting depression or mood as outcomes. Although the literature is sparse, a need exists to organize the available research to chart the direction for future investigations. The purpose of this article is to provide a comprehensive summary of the existing empirical knowledge base on depression in men with prostate cancer. Implications for future research will be presented based on an analysis of the strengths and weaknesses of the existing literature.

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**Table 1. Studies of Prevalence and Correlates of Depression or Mood Disturbance in Patients With Prostate Cancer**

| Study and Setting | Sample Size, Race, and Age (Years) | Disease Stage | Design | Depression or Mood Measure(s) | Results |
|---|---|---|---|---|---|
| Roth et al., 1998, United States | N = 121; 88.2% Caucasian, other not reported [NR]; median = 71 | 80.6% stage D (metastatic), 6.5% stage B (palpable tumor), 4.3% stage C (localized tumor), and 8.6% unknown | Descriptive | Hospital Anxiety and Depression Scale (HADS): cutoff score (≥ 7) for depression | 15.2% had depression; 4 received Structured Clinical Interview for Diagnostic and Statistical Manual–IV (SCID) diagnosis of major mood disorder. |
| Ficarra et al., 2000, Italy | N = 30; race NR; $\bar{X}$ = 64 | Localized | Descriptive | HADS: cutoff score (≥ 8) for depression | 2 patients (6.5%) had depression. |
| Nordin et al., 2001, Sweden | N = 118 at diagnosis, 99 at six-month follow-up; race NR; age NR | 40% advanced disease at diagnosis and 33% advanced disease at six months | Descriptive | HADS: cutoff score (≥ 8) for depression | 12% were depressed at diagnosis; 16% were depressed at six months. Those depressed at diagnosis were 11 times more likely to be depressed at six months (odds ratio 11.2, 95% confidence interval, 6.3–20.1). |
| Ritterband & Spielberger, 2001, United States | N = 26; race NR; age NR | Stage 1 or 2 | Descriptive comparative | Beck Depression Inventory (BDI), SCID, State Trait Personality Inventory | None met SCID criteria; no significant differences existed between the prostate cancer and healthy male control group on BDI. |
| Bisson et al., 2002, United Kingdom | N = 88; race NR; $\bar{X}$ = 64.5 | Localized | Descriptive | HADS: scores (7/8) low threshold for depression; scores (10/11) threshold for clinical depression | 4 had low threshold for depression and none for clinical depression. |
| Pirl et al., 2002, United States | N = 45; 89.6% white, 11.4% black; $\bar{X}$ = 69.4 | Advanced | Descriptive correlational | SCID; BDI: cutoffs not specified on BDI | 12.8% were depressed (SCID); on BDI, 13.3% low cutoff; 0% severe cutoff. Depression associated with fatigue ($r = 0.38$, $p < 0.01$) and functioning ($r = -0.33$, $p < 0.04$). |
| Balderson & Towell, 2003, United Kingdom | N = 94; race NR; $\bar{X}$ = 66.87 | 49% localized, 33% advanced, and 18% unknown | Descriptive | HADS: psychological distress (≥ 15) on combined depression and anxiety subscales | Mean scores for anxiety (7.17) were higher than for depression (5.09). 38% had psychological distress. |
| Penedo et al., 2003, United States | N = 46; 52% non-Hispanic white, 23% Hispanic, 19% black, 6% other; $\bar{X}$ = 60.5 | Localized | Descriptive correlational | Affects Balance Scale: low score implies depressed affect | Positive mood was associated with optimism ($r = 0.49$, $p = 0.001$) and stress management skills ($r = 0.46$, $p = 0.001$). |
| Ullrich et al., 2003, United States | N = 126; 93% white, 7% nonwhite; $\bar{X}$ = 66.1 | Localized | Descriptive comparative | Profile of Mood States: Total Mood Disturbance (TMD) score was sum of subscales (37 items total) | High urinary symptoms and biochemical recurrence were associated with greater mean TMD (19.7) compared to low symptoms and recurrence (1.1) ($p < 0.05$) or no recurrence (2) ($p < 0.01$). |

among optimism, perceived stress management skills, and positive mood following prostatectomy, the final regression model suggested that perceiving oneself able to use stress management techniques effectively mediates the relationship between optimism and positive mood (Penedo et al., 2003).

Ritterband and Spielberger (2001) compared depression in patients with cancer, healthy controls, and depressed psychiatric inpatients. Although the small sample size in each group is an obvious weakness of this study, a methodologic strength was the use of three depression measures: BDI, State Trait Personality Inventory depression scales, and the Structured Clinical Interview for Diagnostic and Statistical Manual–IV. In the main analysis, patients with cancer scored significantly higher on the BDI and the State Trait Personality Inventory than did the healthy controls. However, no significant difference was found in depression scores when the prostate cancer and the healthy male control groups were compared. Bisson et al. (2002) also raised doubts about the clinical significance of depressive symptoms in men with early localized prostate cancer. Older age, being male and therefore less likely to express emotions, being early in the disease process with a relatively good prognosis, and the support being provided in the clinic were cited by the authors as possible factors contributing to the low levels of distress found in this sample.

Pirl, Siegel, Goode, and Smith (2002) investigated the prevalence of depression and associated risk factors in a small sample of patients receiving androgen deprivation therapy for advanced-stage prostate cancer. Thirty-seven men were receiving medical hormonal therapy, and eight men had undergone orchiectomies. Despite their advanced disease and receiving androgen deprivation therapy, the men demonstrated relatively low functional impairment. The only significant risk factor for current depression was a previous history of depression. All patients who received a Structured Clinical Interview for Diagnostic and Statistical Manual–IV diagnosis of major depression reported past episodes of depression.

Ullrich, Carson, Lutgendorf, and Williams (2003) examined the emotional impact of biochemical recurrence of prostate cancer after radical prostatectomy. The study was designed to compare cancer fear and mood disturbance in men with and without biochemical recurrence. Cancer fear and mood disturbance were not independently associated with biochemical cancer recurrence but were significantly related to higher urinary tract symptoms. Men with biochemical recurrence and more severe urinary tract symptoms reported significantly more fear and mood disturbance than either those with low symptoms and recurrence or those with low symptoms with no recurrence. Ullrich et al., reluctant to draw conclusions from this small study, suggested that men with recurrence may have misinterpreted their symptoms as indicators of disease progression and therefore were more likely to become fearful and depressed. Yet the study did not rule out that men with increased fear and mood disturbance were more likely to report symptoms.

## Fatigue and Pain

Table 2 presents studies that included a measure of depression in association with investigations of fatigue or pain in men with prostate cancer. The pain study (Heim & Oei, 1993) was a one-time survey of outpatients in Australia. Two fatigue studies (Monga, Kerrigan, Thornby, & Monga, 1999; Stone, Hardy, Huddart, A'Hern, & Richards, 2000) used prospective designs to investigate changes in fatigue among patients undergoing treatment for prostate cancer. One fatigue study included depression as a correlate in the evaluation of the Multidimensional Fatigue Inventory (Fillion, Gelinas, Simard, Savard, & Gagnon, 2003).

Heim and Oei (1993) found that patients with prostate cancer who had pain were significantly more depressed and anxious than those without pain. Monga et al. (1999) evaluated symptoms among patients preradiotherapy, during radiotherapy, at the completion of radiotherapy, and at four to five weeks following radiotherapy. No new cases of probable depression were diagnosed once the radiotherapy began, and no significant change occurred in sleep symptoms. In contrast, fatigue did increase significantly over the course of radiotherapy. Researchers concluded that fatigue associated with radiotherapy was a reflection of decline in neuromuscular efficiency.

Another study sought to determine the prevalence, severity, and correlates of fatigue in men with prostate cancer prior to and following three months of treatment with hormone therapy (Stone et al., 2000). A relatively high threshold of the HADS depression and anxiety subscales was used to indicate a probable case of anxiety or depression. The baseline finding that fatigue was related positively to depression was expected and is consistent with the results of Fillion et al. (2003). As fatigue significantly increased from baseline to three months after treatment, no significant changes occurred in HADS scores. The best predictor of fatigue severity after three months of hormone therapy was fatigue severity at the beginning of treatment.

## Quality of Life

Twelve studies investigated depression or mood as a component of QOL in patients with prostate cancer (see Table 3). Four studies compared QOL among men receiving one type of treatment for prostate cancer versus an alternative treatment (Beard et al., 1997; Cassileth et al., 1992; Parmar, Phillips, Lightman, & Edwards, 1988; Steineck et al., 2002). Two studies included patients with prostate cancer and patients with other cancers (Parker, Baile, de Moor, & Cohen, 2003; Schag, Ganz, Wing, Sim, & Lee, 1994). Four studies included depression or mood measures in surveys of QOL among various clinical samples following diagnosis or treatment of prostate cancer (Lintz et al., 2003; Perez, Skinner, &

**Table 2. Studies of Fatigue or Pain in Patients With Prostate Cancer That Included Depression as a Correlate**

| Study and Setting | Sample Size, Race, and Age (Years) | Disease Stage | Design | Depression or Mood Measure(s) | Results |
|---|---|---|---|---|---|
| Heim & Oei, 1993, Australia | N = 47; race not reported (NR); $\bar{X}$ = 72 | 87.2% nonmetastatic and 12.8% with metastases | Descriptive comparative | Beck Depression Inventory (BDI): 0–10 (no depression), 11–17 (mild), 18–23 (moderate), and > 23 (severe) | 17% had mild depression, 10.6% moderate, and 4.3% severe. Patients with pain were more depressed than those without pain (F = 3.892, p = 0.05). |
| Monga et al., 1999, United States | N = 36; race NR; $\bar{X}$ = 66 | Localized | Descriptive | BDI: cutoff score ≥ 10 indicates depression. | 22% were depressed at baseline; 19% were depressed at completion of radiotherapy. |
| Stone et al., 2000, United Kingdom | N = 62; 89% white, others NR; median = 69 | Stage A (2%), stage B (45%), stage C (29%), stage D (23%), and stage NR (2%) | Descriptive | Hospital Anxiety and Depression Scale (HADS): cutoff score (≥ 11) | Depression was the strongest baseline correlate of fatigue (Rs = 0.55, p < 0.001). Before hormonal therapy, 3% met HADS cutoff; no significant change existed after therapy. |
| Fillion et al., 2003, Canada | N = 327; race NR; $\bar{X}$ = 65.79 | Stage I (0), stage II (43.4%), stage III (39.8%), and stage IV (16.8%) | Descriptive correlational, instrument testing | HADS | Depression was related to fatigue (r = 0.65, p = 0.002). |

**Table 3. Studies of Quality of Life in Patients With Prostate Cancer That Included a Measure of Depression or Mood**

| Study and Setting | Sample Size, Race, and Age (Years) | Disease Stage | Design | Depression or Mood Measure(s) | Results |
|---|---|---|---|---|---|
| Parmar et al., 1988, United Kingdom | N = 113<br>Medical: n = 58; race and age not reported (NR)<br>Surgical: n = 55; race and age NR | Advanced | Experimental, randomized clinical study | Unspecified mood state questionnaire | No significant differences existed between the groups over time for depression. |
| Cassileth et al., 1992, North America | N = 147<br>Medical: n = 115; 66% white, 34% nonwhite; median = 69<br>Surgical: n = 32; 79% white, 21% nonwhite; median = 71 | Advanced | Descriptive comparative | Profile of Mood States (POMS) | Baseline POMS scores were almost identical; at six months, the medical group had significantly improved mood ($p = 0.01$) with no significant change in the surgical ($p = 0.60$). |
| Schag et al., 1994, United States | N = 104; 92% white, 4% African American, 4% Hispanic; $\overline{X}$ = 69.5 | Disease-free survivors; at diagnosis, 67% limited, 33% locally extensive, and 0% metastatic | Descriptive comparative | Cancer Rehabilitation Evaluation System: one item used to measure depression | 48% of prostate cancer survivors frequently were depressed versus 44% of colon cancer survivors and 51% of lung cancer survivors. |
| Beard et al., 1997, United States | N = 121<br>Group I (whole-pelvis irradiation): n = 25; race NR; $\overline{X}$ = 70.1<br>Group II (small-field irradiation): n = 60; race NR; $\overline{X}$ = 67.9<br>Group III (conformal irradiation): n = 36; race NR; $\overline{X}$ = 67.3 | Group I (T1a–c 29%, T2a–c 54%, T3a–c 17%)<br>Group II (T1a–c 21%, T2a–c 62%, T3a–c 17%)<br>Group III (T1a–c 18%, T2a–c 53%, T3a–c 29%) | Descriptive comparative | POMS | Low levels of mood disturbance existed in the three groups. At 12-month follow-up, depression was worse in group I ($p = 0.066$). |
| Perez et al., 2002, United States | N = 134; 95% non-Hispanic white, other NR; $\overline{X}$ = 66 | Early stage | Descriptive correlational | POMS Total Mood Disturbance (TMD) Score | Low levels of TMD; quality of life (QOL) was significantly related to TMD ($r = -0.57$, p was NR); sexuality and relationship adjustment accounted for 12% variance in TMD. |
| Steineck et al., 2002, Sweden | N = 326<br>Group I (radical prostatectomy): n = 166; race NR; $\overline{X}$ = 64.1<br>Group II (watchful waiting): n = 160; race NR; $\overline{X}$ = 64.8 | Localized | Descriptive-comparative follow-up survey | Center for Epidemiologic Studies–Depression (CES-D) scale, a one-item self-assessment of depression on a seven-point visual scale | 7% of group I and 11% of group II scored above 90th percentile on CES-D; 35% of group I and 38% of group II had moderate to high depression on the visual scale. Group differences were not significant. |
| Lintz et al., 2003, United Kingdom | N = 210; 91% white, 7% black, 1% Indian, and 1% other; $\overline{X}$ = 69.7 | 69% localized, 30% metastatic, and 1% unknown | Descriptive comparative | Hospital Anxiety and Depression Scale | 3 patients scored $\geq$ 11, 15 scored 8–10, and 192 scored < 8. Those with advanced disease were significantly more depressed than those with local disease ($p < 0.001$) |
| Parker et al., 2003, United States | N = 77 men with urologic cancer, assumed to be largely a prostate cancer sample; race and age NR | NR | Descriptive comparative | CES-D | Depression mean for men with urologic cancer (10) was significantly lower than for women with gynecologic cancer (15.5) and breast cancer (14.7) ($p < 0.05$). |
| Rondorf-Klym & Colling, 2003, United States | N = 88; 100% Caucasian; $\overline{X}$ = 66 | Localized | Descriptive correlational | CES-D (10-item short version) | Depression was not a significant predictor of QOL. |
| Salminen et al., 2003, Finland | N = 25; race NR; $\overline{X}$ = 64.4 | T3 tumors (85%); none had metastasis | Descriptive comparative | Beck Depression Inventory (BDI) | Patients had low levels of depression and did not differ from controls before androgen deprivation and radiotherapy. Depression did not increase for patients at 6 and 12 months. |
| Visser et al., 2003, the Netherlands | N = 23; race and age NR | NR | Descriptive comparative | POMS (Dutch standardized validated shortened version) | Health-related QOL decreased for men with prostate cancer after three months ($p \leq 0.05$). No significant changes occurred over time for men with benign prostatic hyperplasia. Mood may have influenced QOL in men with prostate cancer ($p \leq 0.10$). |
| Taxel et al., 2004, United States | N = 23; race NR for both groups<br>n = 13; lutenizing hormone-releasing hormone (LHRH) A therapy and estrogen; $\overline{X}$ = 70<br>n = 10; LHRH A therapy and placebo; $\overline{X}$ = 70.7 | Localized, stage B, and stage C (numbers were NR) | Randomized clinical trial | BDI | No significant differences regarding depression existed between the patients receiving estrogen or placebo. |

Meyerowitz, 2002; Rondorf-Klym & Colling, 2003; Visser et al., 2003). Two studies investigated the effect of hormonal therapy on cognitive function (Salminen et al., 2003; Taxel, Stevens, Trahiotis, Zimmerman, & Kaplan, 2004).

Parmar et al. (1988) randomized men with advanced prostate cancer to either medical or surgical orchidectomy. No significant differences existed in outcomes for the two treatment groups. Casselith et al. (1992) conducted a nonrandomized multisite study with a purpose similar to the Parmar et al. clinical trial. QOL and psychosocial status were examined in men with advanced prostate cancer who self-selected either medical or surgical castration. Although QOL and psychosocial status significantly improved over six months for patients in the medical treatment group, no such changes were found for patients who had surgery.

Other studies have compared QOL outcomes for men with early-stage prostate cancer associated with different treatments. A small study investigated three groups of men receiving different external-beam irradiation techniques (Beard et al., 1997). The overall results suggested low levels of mood disturbance across the treatment groups and that mood, as well as other indicators of QOL, did not significantly change over time. In another study, men with localized prostate cancer who had been randomized to either radical prostatectomy or watchful waiting were compared on physical symptoms and QOL after a mean follow-up of four years (Steineck et al., 2002). No significant difference was found between the groups in the prevalence of depression. However, the depression prevalence rates reported for the sample as a whole, which were based on a relatively rigorous operational definition of depression, were some of the higher rates of depression reported for men who have been treated for localized disease.

In a study of disease-free cancer survivors (Schag et al., 1994), nearly half of the prostate cancer survivors indicated they frequently were depressed, with most reporting low levels of severity. As prostate cancer survivors lived longer, their QOL declined. Parker et al. (2003) investigated predictors of QOL in a large sample of patients with cancer, including men with urologic cancer. The remainder of the sample was comprised of women with breast and gynecologic cancers and men and women with gastrointestinal cancer. Almost a third of the sample reported significant levels of depression on the CES-D. Older patients and those who were married or had relatively high levels of social support reported significantly fewer depressive symptoms.

A survey of a large sample of men with prostate cancer at various stages was conducted to identify support and psychological care needs (Lintz et al., 2003). Most men appeared to be functioning well with low levels of depression. The most commonly reported concerns were fear about the cancer spreading, concern that those close to them were worried, and changes in sexual feelings. Visser et al. (2003) compared health-related QOL between men recently diagnosed with prostate cancer and a group of men with BPH. Trends in the results suggested that patients with prostate cancer fared worse on health-related QOL over time, with mood possibly having a small influence in this outcome.

Perez et al. (2002) examined the extent to which sexuality was associated with psychosocial adjustment following radical prostatectomy. Although the research included a survey of patients and their partners, only the patient survey used the POMS. Eighty-four percent of the patients and 74% of the partners reported favorable QOL. Sexuality did not have a notable influence on emotional distress and QOL. Rather, the nonsexual variables, including overall physical functioning and inclination toward optimism, were significant predictors of mood and QOL. Rondorf-Klym and Colling (2003) used path analytic techniques to test a hypothesized causal model of QOL in men following radical prostatectomy. Although the results did not support retaining depression as a predictor, the final model explained 72% of the variance in QOL, with social support, self-esteem, and health locus of control being the significant predictors.

Concern that androgen deprivation therapy may be associated with cognitive impairment led Salminen et al. (2003) to conduct a longitudinal study over 12 months to assess possible changes from baseline on cognition, depression, and QOL. Although impairment in physical functioning was found, no changes occurred in what were initial low levels of depression and no impairment in cognitive function developed. Taxel et al. (2004) investigated the effect of estrogen therapy on the cognitive function of men receiving androgen deprivation therapy. Based on research suggesting that estrogen replacement therapy may improve the memory performance of postmenopausal women (Yaffe, Sawaya, Lieberburg, & Grady, 1998), a similar effect was hypothesized for men rendered hypogonadal by hormonal therapy for prostate cancer. No significant differences were found between experimental participants and controls on most measures of cognition or on number of depressive symptoms.

## Patient and Partner Comparisons

Four studies compared patients with prostate cancer and their partners on self-reported perceptions of depression or mood disturbance (see Table 4). Depression or mood instruments were administered to patients and partners. Three studies investigated depression in patients and partners (Banthia et al., 2003; Cliff & MacDonagh, 2000; Kornblith, Herr, Ofman, Scher, & Holland, 1994). One study investigated the congruity between patient mood and partner perceptions of patient mood (Carlson, Ottenbreit, St. Pierre, & Bultz, 2001).

Kornblith et al. (1994) surveyed patients with prostate cancer and their spouses attending a health education lecture series to examine patient and spouse adaptation. The greater distress found among spouses was one of the more important findings of this study. The patients reporting higher distress levels were more likely to have advanced disease, be receiving hormonal therapy, and experiencing more pain, fatigue, urinary problems, and declining physical functioning.

Another study compared psychosocial adjustment in patients with prostate cancer and their spousal partners (Cliff & MacDonagh, 2000). Consistent with the findings of Kornblith et al. (1994), Cliff and MacDonagh concluded that psychological morbidity was more prevalent and more severe among partners than among patients. The difference between patients and partners on psychological morbidity was most pronounced on the anxiety and general cancer distress scores and less on the mood disturbance. Banthia et al. (2003) also reported low levels of patient-spouse concordance among couples coping with prostate cancer. Whereas being a part of a strong dyad moderated the negative impact of maladaptive coping on mood disturbance for patients, marital factors did not moderate the relationship between coping and mood disturbance for spouses.

## Table 4. Studies That Included Patient and Partner Comparisons on Depression or Mood

| Study and Setting | Sample Size, Race, and Age (Years) | Disease Stage | Design | Depression or Mood Measure(s) | Results |
|---|---|---|---|---|---|
| Kornblith et al., 1994, United States | N = 255<br>Group I (patients): n = 172 (96% white, 4% black, < 1% Hispanic), $\bar{X}$ = 67.9<br>Group II (spouses): n = 83 (96% white, 3% black, 1% Hispanic), median = 63.2 | Two-thirds of the patients had advanced-stage disease. | Descriptive comparative | One item of the Psychological Distress subscale of the European Organization for Research and Treatment of Cancer Prostate Cancer Quality of Life Questionnaire | 21% of patients and 25% of spouses were classified as moderately to very much depressed; spouses were significantly more distressed than patients (p < 0.001). |
| Cliff & MacDonagh, 2000, United Kingdom | N = 270; 135 men with prostate cancer and their spousal partners; race not reported (NR); men's $\bar{X}$ = 73.9; partners' $\bar{X}$ = 70.5 | Stage 1: n = 30<br>Stage 2: n = 59<br>Stage 3: n = 36<br>Stage 4: n = 10 | Descriptive correlational, instrument development | Hospital Anxiety and Depression Scale: > 7 = no depression; 8–11 = borderline; and > 11 = definite depression | Borderline depression: 4.4% of patients and 7.4% of partners<br>Definite: 3.7% of patients and 3.0% of partners |
| Carlson et al., 2001, Canada | N = 30; 15 men and their partners; race NR; men's $\bar{X}$ = 69.3; partners' $\bar{X}$ = 65.7 | Diagnoses ($\bar{X}$ = 8 months) prior to study, on radiation therapy, stage NR | Descriptive comparative | Profile of Mood States (POMS)–Depression subscale and Total Mood Disturbance (TMD): In addition to patients' self-ratings, partners responded to items as to how they thought patients had been feeling. | Mean patient depression scores self-rated (9.67) and rated by their partners (10.40). Mean patient self-ratings for TMD (14.27) and partners' ratings of patient TMD (22.13) |
| Banthia et al., 2003, United States | N = 208<br>n = 154 men with prostate cancer; 87% Caucasian, 6.5% African American, 2.6% Asian, 1.3% Latino, 1.3% Native American, other 1.3%; $\bar{X}$ = 66<br>n = 154 spouses and female partners; 82.9% Caucasian, 5.9% African American, 5.3% Asian, 4.6% Latino, 1.3% Native American; $\bar{X}$ = 62 | Stage A (39.6%)<br>Stage B (30.5%)<br>Stage C (10.4%)<br>Stage D (3.9%)<br>Unknown (15.6%) | Descriptive correlational | POMS–Depression subscale and TMD for patients and partners | Mean patient depression scores (7.62) versus partner's (8.94); mean patient TMD scores (17.20) versus partner's (20.53). Dyadic adjustment (DA) predicted partner TMD (b = –0.791, p < 0.0005); DA moderated the effects of avoidant coping (b = –0.786, p < 0.0005) and intrusive thinking (b = –0.320, p = 0.035) on patient TMD. |



One study compared patient reports to partner reports of patient mood in a small sample of women with breast cancer and their husbands and men with prostate cancer and their wives (Carlson et al., 2001). The women with breast cancer and their husbands tended to be younger than 50 whereas the men in the prostate cancer group and their wives tended to be older than 60 years. To assess the congruency between the mood disturbance reported by patients and estimated by their partners, patients were asked to respond to the items with regard to themselves. Partners were asked to respond with regard to how they believed the patients were feeling. Although overrating the distress of their partners, female partners of men with prostate cancer served as better proxies in rating patient mood than male partners of women with breast cancer.

### Interventions Targeting Depression or Mood

Nine studies examined the effectiveness of psychoeducational or symptom management interventions for men with prostate cancer (see Table 5). Outcomes measured included depression or mood. Four studies provided a coherent empirical knowledge base for the use of informational interventions in reducing the negative impact of radiation therapy (Johnson, 1996; Johnson, Fieler, Wlasowicz, Mitchell, & Jones, 1997; Johnson, Nail, Lauver, King, & Keys, 1988; Kim, Roscoe, & Morrow, 2002). The other studies tested a variety of interventions for men with prostate cancer, including an informational intervention to promote participation in treatment decision making (Davison & Degner, 1997), group education to improve QOL (Lepore, Helgeson, Eton, & Schulz, 2003), and expressive writing about the cancer experience to improve health outcomes (Rosenberg et al., 2002). Other interventions tested were a follow-up by a specialist nurse to promote optimal symptom management (Helgesen et al., 2000) and peer support provided by prostate cancer survivors to enhance social support, increase self-efficacy, and decrease depressive symptoms (Weber et al., 2004).

Three randomized clinical trials (Johnson, 1996; Johnson et al., 1988; Kim et al., 2002) and one quasi-experimental clinical study (Johnson et al., 1997) tested the effect of providing objective concrete information to patients undergoing radiation therapy. All studies based the hypothesized beneficial effect on self-regulation theory (Johnson, Lauver, & Nail, 1989).

Johnson et al. (1988) randomized volunteers to receive either the information routinely provided to all patients or routine information plus four tape-recorded objective informational messages. The researchers hypothesized that the experimental group would experience significantly less disruption in usual activities and mood disturbance than the control group. Although a significant positive correlation existed between the number of side effects and mood disturbance, the mood disturbance levels were described as low and did not differ by group. The authors suggested that low mood disturbance likely was related to older age, having several weeks to adjust to a cancer diagnosis, and having an

**Table 5. Intervention Studies of Patients With Prostate Cancer Targeting Depression or Mood as an Outcome**

| Study and Setting | Sample Size, Race, and Age (Years) | Disease Stage | Design | Depression or Mood Measure(s) | Results |
|---|---|---|---|---|---|
| Johnson et al., 1988, 1989 (two articles from same study), United States | N = 84; 96% white, other not reported (NR); $\bar{X}$ = 67.9<br>Informational intervention: n = 42; race and age NR for subgroup<br>Control group: n = 42; race and age NR for subgroup | Stage A (confined to prostate), B (invasion of gland wall), or C (spread to lymph nodes)—breakdown not specified | Randomized clinical trial | Profile of Mood States (POMS), Total Mood Disturbance (TMD) | Overall TMD was low; number of side effects was significantly related to TMD (Rs = 0.23–0.42; $p \leq 0.025$); TMD did not differ by group assignment over time. |
| Johnson, 1996, United States | N = 62; 97% white, 3% other; $\bar{X}$ = 69.6<br>Coping intervention: n = 22; race and age NR for subgroup<br>Concrete information: n = 20; race and age NR for subgroup<br>Control group: n = 20; race and age NR for subgroup | 16% stage A (confined to prostate), 68% stage B (invasion of gland wall), and 16% stage C (spread to lymph nodes) | A randomized, three-group, clinical trial | Bipolar POMS (POMS-BI) | Patients reported more positive than negative moods; less optimistic patients had less positive mood ($\bar{X}$ = 24.2) than those with more optimism ($\bar{X}$ = 31.3) ($p \leq 0.001$). Concrete objective information improved mood in pessimistic patients ($p \leq 0.05$). |
| Davison & Degner, 1997, Canada | N = 60<br>Self-efficacy information intervention: n = 30 (race NR); median = 66.5<br>Written information: n = 30 (race NR); median = 69.5 | Newly diagnosed before initial treatment consultation, radical prostatectomy was most frequent treatment, stage NR | Randomized clinical study | Center for Epidemiologic Studies–Depression (CES-D) scale | Both groups had similar levels of depression at six weeks. |
| Johnson et al., 1997, United States | N = 226<br>Preparatory informational intervention: n = 110 (54 with prostate cancer and 56 with breast cancer); race primarily white; age NR<br>Control group: n = 116 (60 with prostate cancer and 56 with breast cancer); race primarily white; age NR | Stage I, II, or III disease | Quasi-experimental clinical study | POMS-BI | Patients with prostate cancer had higher mood ($\bar{X}$ = 23.52) than patients with breast cancer ($\bar{X}$ = 18.93) ($F[1, 222] = 4.52$, $p < 0.05$); positive moods were more balanced than negative moods in sample. Optimistic patients had more positive than negative moods; intervention helped pessimistic patients ($F[2,435] = 3.04$, $p < 0.05$). |
| Helgesen et al., 2000, Sweden | N = 400<br>Nurse specialist follow-up: n = 200; race NR; $\bar{X}$ = 76.2<br>Urologist follow-up: n = 200; race NR; median = 69.5 | Specialist: T0 (21%), T1 (6%), T2 (20%), T3 (48.5%), T4 (4.5%), M0 (72.5%), M1 (22%), Mx (5.5%)<br>Urologist: T0 (15.5%), T1 (8.5%), T2 (18.5%), T3 (49%), T4 (8.5%), M0 (73.5%), M1 (22%), Mx (4.5%) | Randomized multicenter study | Hospital Anxiety and Depression Scale | Depression in nurse group: 1.9% at baseline, 4.8% at 12 months, 5.2% at 24 months, and 9.4% at 36 months. Depression in the urologist group: 3.1% at baseline, 2.7% at 12 months, 2.3% at 24 months, and 7.3% at 36 months |
| Kim et al., 2002, United States | N = 152; 96% Caucasian, other NR; $\bar{X}$ = 70.8<br>Informational intervention: n = 77; race and age NR for subgroup<br>Comparison group: n = 75; race and age NR for subgroup | 13% stage A (confined to prostate), 66% stage B (invasion of gland wall), and 21% stage C (spread to lymph nodes) | Randomized clinical trial | POMS | Negative affect was not significant after treatment; negative affect was positively associated with severity of side effects regardless of group assignment. |
| Rosenberg et al., 2002, United States | N = 30; 97% Caucasian, 3% Native American; $\bar{X}$ = 70.43<br>Expressive disclosure: n = 16; race NR for subgroup; $\bar{X}$ = 69.6<br>Control group: n = 14; race NR for subgroup; $\bar{X}$ = 71.4 | Stage NR, no prestudy differences in cancer stage between groups | Randomized pilot study | Brief POMS | Baseline measures of psychological health, including Brief POMS, showed high levels of emotional health in both groups. No significant improvement in mood was associated with intervention. |
| Lepore et al., 2003, United States | N = 250<br>Group I (control): n = 80; 90% Caucasian, 10% African American; $\bar{X}$ = 65.6<br>Group II (education only): n = 84; 90.5% Caucasian, 9.5% African American; $\bar{X}$ = 64.8<br>Group III (education plus discussion): n = 86; 90.7% Caucasian, 8.1% African American, 1.2% Asian American; $\bar{X}$ = 64.8 | Group I: T1 (22.5%), T2 (62.5%), T3 (15%)<br>Group II: T1 (16.7%,), T2 (69%), T3 (14.3%)<br>Group III: T1 (15.1%), T2 (75.6%), T3 (9.3%) | Randomized clinical trial | CES-D (15-item modified version) | Depressive symptoms were low at baseline and remained low independent of group assignment. |

*(Continued on next page)*

**Table 5. Intervention Studies of Patients With Prostate Cancer Targeting Depression or Mood as an Outcome *(Continued)***

| Study and Setting | Sample Size, Race, and Age (Years) | Disease Stage | Design | Depression or Mood Measure(s) | Results |
|---|---|---|---|---|---|
| Weber et al., 2004, United States | N = 30<br>Control: n = 15; 80% white, 13% black, 6% Hispanic; $\bar{X}$ = 59.7<br>Dyadic intervention (1:1 support by long-term prostate cancer survivors): n = 15; 87% white, 13% black; $\bar{X}$ = 57.5 | Stage NR; men with radical prostatectomy for prostate cancer | Pilot randomized clinical study | Geriatric Depression Scale (Short Version): score > 5 indicative of clinical depression | Two men had depression scores > 5. At baseline, depression was significantly correlated with self-efficacy ($r = -0.65$, $p \leq 0.01$). A significant difference existed in depression between the two groups at four weeks ($F = 5.90$, $p = 0.02$) but not at eight weeks ($F = 2.22$, $p = 0.14$). |

excellent prognosis. The experimental group did experience significantly less disruption in usual activities compared to the control group.

Kim et al. (2002) conducted a similar randomized clinical trial in which patients were randomly assigned to either an objective information intervention group or usual care, with severity of side effects from radiation therapy and mood disturbance as outcome variables. The findings were consistent with those of Johnson et al. (1988). Fatigue, sleeping problems, urinary problems, and diarrhea were significantly associated with mood disturbance. Patients in the informational group experienced significantly less fatigue than those in the control group.

Johnson (1996) examined whether men with prostate cancer responded to instructional interventions differentially based on dispositional optimism or dispositional pessimism. Based on self-regulation theory, Johnson hypothesized that pessimists would benefit more from objective concrete information about the radiation experience and that optimists would benefit more from instruction about self-care and coping activities. A randomized, three-group design (control, self-care and coping activities instruction, and concrete objective information) was used with repeated measures of mood and disruption of activities. Although concrete objective information had a significant positive effect on mood only among pessimistic patients, significant positive effects on functioning existed in optimistic as well as pessimistic patients. These results were repeated in patients receiving radiation therapy for breast or prostate cancer (Johnson et al., 1997).

Another study examined the hypothesis that an informational intervention would enable men to be active in treatment decision making and decrease their symptoms of anxiety and depression (Davison & Degner, 1997). Upon diagnosis of prostate cancer, participants were randomized to either the intervention group receiving written information, discussion, a list of questions that might be asked of the physician, and an audiotape of the medical consultation or the control group receiving written information alone. Men in the intervention group were more active in treatment decision making than men in the control group.

Expressive disclosure, a brief psychological intervention that involves asking an individual to write about thoughts and feelings related to a stressful event, was tested in a small randomized study of men with prostate cancer (Rosenberg et al., 2002). Although men in the expressive disclosure group showed a significant reduction in pain compared to controls, no significant differences were found between the groups on psychological variables and immune status.

Lepore et al. (2003) compared the effects of a group education intervention, a group education intervention plus discussion, and a control condition on QOL. The results indicated that depression was not influenced by the interventions. Interventions benefited noncollege graduates through better physical functioning and increased positive health behaviors. In contrast, college graduates, regardless of group assignment, did not benefit. These findings suggested that patients with prostate cancer without a college education have knowledge and resource deficits that make psychoeducational interventions a particularly good match for their needs.

A multicenter study sought to determine whether men with prostate cancer could be followed up safely by a specialist nurse (Helgesen et al., 2000). Participants were randomized to follow-up by a nurse specialist or a urologist. The two treatment groups were compared on patient satisfaction with service access, psychological distress, and resource utilization twice a year for two years and once three years after randomization. No significant differences existed between the groups on anxiety, depression, cancer symptoms, lag time from cancer symptoms to intervention, number of interventions for cancer symptoms, and overall accessibility to services.

Weber et al. (2004) assessed the potential benefits of providing peer support by long-term survivors of prostate cancer to men who recently had undergone prostatectomy for the disease. Basing the intervention on Bandura's (1997) self-efficacy theory, the researchers expected that peer support would increase self-efficacy and decrease depression through vicarious learning and social support. In addition to beneficial effects on depression at four weeks, experimental participants had significantly higher levels of self-efficacy following eight weeks of peer support intervention as compared to controls. Although the findings must be considered with caution, the beneficial effect of peer support on depression in the early weeks following prostatectomy suggests that further investigation of peer psychosocial intervention versus professional psychosocial intervention is needed.

## Discussion

Given the early developmental stage of the research base on depression in men with prostate cancer, generalizations derived from this review must be viewed with caution. Methodologic weaknesses include the small total number of studies of which even a smaller amount meet rigorous design standards. Small sample sizes that are not representative of minorities, particularly African Americans, are of particular concern in making generalizations to the total population of men with prostate cancer in the United States. Selecting studies for review based on a broad definition of depression, inclusive of studies measuring depression with specific depression instruments, and measuring mood more globally using the POMS, is a conceptual limitation to the review. Similarly, the meaningfulness of a synthesis of research evidence is limited by the low degree of uniformity in the depression measures selected, scoring procedures, and interpretation of scores found among the studies.

Despite the limitations, this review does yield a preliminary scientific view of the problem of depressive symptoms among the growing number of men coping with prostate cancer diagnosis and treatment. Based on the existing empirical evidence, rates of depression among older men with prostate cancer are lower than those typically reported for women with breast cancer (Strouse, 1999) whose average age is younger, but higher than those reported for older men in the general population (Blazer, Kessler, McGonagle, & Swartz, 1994). Men with prostate cancer most at risk for depressive symptoms include those with advanced disease, prominent cancer symptoms and side effects of treatment, and a history of clinical depression. Prostate cancer pain appears to be associated strongly with depressive symptoms, whereas fatigue induced by radiation therapy or hormonal therapy has not been associated consistently with increasing depression. QOL studies have found few prostate treatment variables associated with depression. Rather, major findings from these studies indicate that being older, being married, having high social support, being optimistic, and having less impairment in physical functioning are associated with decreased risk of depression.

The profile of risk factors associated with depression in men with prostate cancer emerging from this review is highly consistent with the profile of factors empirically shown to be associated with risk of depression in cancer populations (McDaniel, Musselman, Porter, Reed, & Nemeroff, 1995). The studies comparing men with prostate cancer and their partners suggest that partners' risk for psychological distress, including depressive symptoms, is as high as or higher than patients' risk.

Notwithstanding the research on informational interventions, the results of this review and other comprehensive reviews of psychosocial cancer intervention research (e.g., Barsevick et al., 2002; Meyer & Mark, 1995) indicate that the state of the science for supportive care interventions aimed toward men with prostate cancer is limited. The modest amount of interest in addressing the psychological complications of prostate cancer as compared to breast cancer often is attributed to the common belief that older men generally are unlikely to experience depression, even when dealing with cancer (Pirl & Mello, 2002). The findings of some studies reviewed reinforce this notion whereas others call it into question. The evidence suggests that for Caucasian men with middle-to-upper socioeconomic status and ready access to diagnosis and treatment during early-stage prostate cancer, being male and older may, in some sense, be "protective" against depressive symptoms. Whether this gender-related phenomenon is mostly the result of the traditional male gender role prohibition against admitting weaknesses or sociologic and biologic factors limiting the experience of depression among men is not sufficiently clear from the available empirical data (Moller-Leimkuhler, 2002; Pirl & Mello).

Another possible explanation for gender differences in depressive symptoms is that the instruments currently available to measure depression, and the diagnostic criteria on which they are based, are biased toward ways that women tend to express emotional distress in Western culture. For example, one study that included a gender comparison of scores on the BDI in a community sample found significant gender differences on items concerning the future, crying, and sex. Men did not score higher than women on any BDI items (Salokangas, Vaahtera, Pacriev, Sohlman, & Lehtinen, 2002). A gender-specific analysis of the concept of depression holds that whereas women tend to directly experience, acknowledge, and display depressive emotions, men tend to distance themselves from these feelings and express depression through maladaptive behavior destructive to self, others, and relationships (Lee & Owens, 2002; Lynch & Kilmartin, 1999).

## Conclusions

Since the mid-1990s, a trend toward increased research into depression among men with prostate cancer has existed. Nursing science is prominent in making contributions to this growing field of investigation. Nurses can use their current knowledge to identify men with prostate cancer at highest risk for depression in their clinical settings. Although the concept of male depression is not widely accepted and lacks sufficient empirical support, this concept is useful to clinicians as a reminder to assess men for maladaptive behaviors (e.g., substance abuse, self-neglect, abusive behavior directed toward significant others) as well as expression of depressed affect. The findings also indicate that clinicians are well advised to assess the psychological status of not only the male patient with prostate cancer but also the potential for depression in the patient's wife or partner. The existing evidence supports the benefits of psychosocial interventions for depression in various cancer populations (Barsevick et al., 2002), and especially for women with breast cancer (Meyer & Mark, 1995). Similar clinical services may be applicable to men with prostate cancer, and clinicians should consider referring men with prostate cancer for psychosocial intervention.

However, the direct clinical relevance of the research on depression in men with prostate cancer is tempered by the small number of studies conducted to date in comparison to the number of similar studies conducted with a focus on women with breast cancer. Moreover, much of the extant research literature on depression in men with prostate cancer is limited by serious methodologic weaknesses. As the number of aging men at risk for prostate cancer rapidly increases in the United States and other countries, the need for empirical knowledge developed from methodologically sound studies far exceeds the current research base. A major limitation to the clinical relevance of the existing research for U.S. clinical populations is the notable failure of most studies to include substantial numbers of African American men, despite the high prevalence of disease in this population. Maintaining the current momentum of research in the area should remedy these shortcomings.

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