Available online at www.sciencedirect.com
ScienceDirect
Applied Nursing Research 22 (2009) 154 – 158
Applied Nursing Research
www.elsevier.com/locate/apnr

Original Articles

Insomnia, depression, and distress among outpatients with prostate cancer

Shannon Ruff Dirksen, PhD, RN[a,*], Dana R. Epstein, PhD, RN[b], Michael A. Hoyt, PhD[c]

[a]College of Nursing and Healthcare Innovation, Arizona State University, Phoenix, AZ 85004-0698, USA
[b]Carl T. Hayden Veterans Affairs Medical Center and Clinics, Phoenix, AZ 85012, USA
[c]Department of Psychology, Arizona State University, Tempe, AZ 85287-1104, USA

Received 12 June 2007; accepted 15 September 2007

Abstract Limited information is known about insomnia, depression, and distress in men with prostate cancer. This study explored insomnia and its relationship to depression and distress in this population. Participants (N = 51) were recruited from a Veterans Affairs Medical Center outpatient clinic. Questionnaires included the Insomnia Severity Index, Center for Epidemiologic Studies-Depression Scale, and Impact of Event Scale. Findings indicated that many men had insomnia and depression with a moderate level of distress. Half the men with clinically significant insomnia also had clinically significant depression. Significant relationships were found among insomnia, depression, and distress. Implications for research and practice are offered.

1. Introduction

Individuals with cancer appear to be particularly vulnerable to disturbances in sleep. Insomnia prevalence rates for patients with varying types of cancer are estimated at 30% to 50%, with up to 20% of the general population reporting insomnia (Savard & Morin, 2001). Prostate cancer is the most common type of cancer diagnosed in men, yet few studies have examined insomnia in men with prostate cancer. Men often receive treatment for prostate cancer that would place them at high risk for developing a sleep problem, including radical prostatectomy (e.g., urinary and bowel problems), radiation therapy (e.g., bladder irritation and frequent voiding), and hormonal therapy (e.g., hot flashes and night sweats). One recent study reported insomnia as a clinically significant symptom occurring in 32% (n = 327) of all men treated for prostate cancer by radical prostatectomy (Savard et al., 2005). Of these men with significant levels of insomnia, 18% then met additional diagnostic sleep criteria for an insomnia syndrome, which is at a rate three times higher than that found in the general population. Risk factors for an insomnia syndrome included depression, pain, younger age, and advanced disease. Insomnia is typically defined as difficulty initiating and/or maintaining sleep, or nonrestorative sleep, lasting at least 1 month and resulting in clinically significant daytime impairment or distress (American Sleep Disorders Association, 2005).

Depression is not uncommon in patients diagnosed with prostate cancer, with estimates of occurrence ranging from 7% to 48% (Bennett & Badger, 2005). In a sample of mostly patients with advanced prostate cancer, findings revealed that 15% of the men scored at or above the cutoff level for significant depression (Roth et al., 1998). The severity and prevalence of psychological and psychophysiological symptoms have been examined in men (n = 861) undergoing various treatments for prostate cancer (Hervouet, Savard, & Simard, 2005). Findings revealed insomnia (32%) as the most frequently reported symptom, followed by anxiety (24%), fatigue (19%), and depression (17%). Insomnia was not related to type of treatment, whereas depression and psychological distress were initially higher in men who received external radiation. Similar to insomnia, depression has not been adequately addressed in the prostate cancer literature and few studies have examined its relationship to insomnia and distress.

Persons diagnosed with a life-threatening illness such as cancer may exhibit diagnostic features of posttraumatic stress disorder (PTSD), which can be described as persistent symptoms of heightened arousal, avoidance of stimuli

* Corresponding author. Tel.: +1 602 496 0756 (office); fax: +1 602 496 0886.
E-mail addresses: shannon.dirksen@asu.edu (S.R. Dirksen), dana.epstein@va.gov (D.R. Epstein), mahoyt1@asu.edu (M.A. Hoyt).

0897-1897/$ – see front matter © 2009 Published by Elsevier Inc.
doi:10.1016/j.apnr.2007.09.001

associated with the event, and intrusive recollections of the event (American Psychiatric Association, 1994). Intrusive thoughts include unbidden images and thoughts, troubled dreams, and strong waves or pangs of feeling in relation to the illness. Difficulty initiating or maintaining sleep may indicate symptoms of distress in persons with PTSD. In a review of research studies (n = 13) that examined distress in adults following cancer-related treatment, the incidence for PTSD was found to range from 0% to 21% (Kangas, Henry, & Bryant, 2002).

In addition to the paucity of information regarding insomnia, depression, and distress as singular symptoms in men with prostate cancer, correlations among these variables have also not been fully explored. The purpose of this study was to describe insomnia in men with prostate cancer and to examine relationships among insomnia, depression, and distress.

2. Methods

2.1. Design

This exploratory study used a descriptive, cross-sectional, correlational design.

2.2. Sample and setting

The convenience sample consisted of 51 veterans who were currently receiving prostate-cancer-related treatment in an outpatient ambulatory clinic at a Veterans Affairs Medical Center in southwestern United States. This sample of men with prostate cancer was part of a larger study that examined coping processes in men with various types of cancer.

2.3. Instruments

All study questionnaires had been used in prior studies of patients with cancer. Demographic and clinical information were gathered on a form completed by the participant. The study questionnaires included the Insomnia Severity Index (ISI), a seven-item scale that evaluates perceived severity of insomnia symptoms (Bastien, Vallières, & Morin, 2001). The ISI is a Likert-type scale with responses ranging from 0 (*not at all*) to 4 (*very severe*). Totaled scores can range from 0 to 28, with a scale cutoff score of 10 indicating clinically significant insomnia. The ISI has established reliability and validity. In this study, Cronbach's alpha was .91.

Depression was measured by the 10-item Center for Epidemiologic Studies Depression Scale (CES-D; Andresen, Malmgren, Carter, & Patrick, 1994). The CES-D is a self-report scale that identifies symptoms of depression in adults by focusing on a person's current emotional experience. The score consists of the number of symptoms of depression weighted by symptom frequency and duration. Totaled scores can range from 0 to 30, with a cutoff score of 10 indicating a high level of depressive symptoms. The CES-D is a widely used scale with established estimates of reliability and validity. Cronbach's alpha in this study was .76. One CES-D item related to sleep ("my sleep was restless") was removed from the totaled score before the scale was correlated with the ISI. This is typically done when correlating CES-D scores with a scale that measures sleep disturbances.

Distress was evaluated by the Impact of Event Scale (IES) intrusive subscale (Horowitz, Wilner, & Alvarez, 1979). The subscale measures intrusive symptoms after a traumatic life event. In this study, participants were told to focus on prostate cancer as the traumatic life event. The IES intrusive subscale inquires about cancer thoughts and images that impinge intrusively and uncontrollably on an individual's thinking and emotions. The seven-item subscale is in a Likert-type format (1 = *not at all*, 2 = *rarely*, 3 = *some*, and 4 = *often*). Totaled scores can range from 7 to 28, with higher scores indicating more episodes of intrusion. The intrusive subscale has established reliability and validity. Cronbach's alpha in this study was .88. Cutoff scores for the IES have not been established.

2.4. Procedure

Approval was obtained from the institutional review board at the participating site before the study began. All participants gave written informed consent. Participants received a packet of questionnaires that included the

Table 1
Demographic and clinical characteristics (N = 51)

Characteristic	Value
Age (years)	
M (*SD*)	73.4 (10.2)
Range	52–94
Ethnicity	
Native American	3
African American	2
White	44
Hispanic	2
Marital status	
Married/Significant relationship	34
When diagnosed	
2–6 months	2
7–11 months	3
1–5 years	16
>5 years	29
Not known	1
Stage at diagnosis	
I	3
II	16
III	4
IV	26
Not known	2
Treatment	
Prostatectomy	13
Chemotherapy	16
Radiation therapy	29
Hormonal therapy	40

demographic form, ISI, CES-D, and IES intrusive subscale. The instruments were self-report and completed by the participant. The questionnaires were distributed and collected by a research assistant associated with the study.

3. Results

3.1. Demographic and clinical characteristics

The sample consisted of 51 men with prostate cancer who had a mean age of 74 years and were predominately White (86%; Table 1). Most were married or in a significant relationship (67%), with a mean education level of some college or technical courses. More than half of the sample (n = 28; 61%) had an annual income of US$30,000 or less. Twenty-nine men (57%) were diagnosed 5 or more years ago with prostate cancer and 14 individuals also reported current or prior history of another cancer including larynx, colon, lung, and myeloma. Fifty-one percent of the men (n = 26) had Stage IV metastatic disease. The sample represented most of the treatment modalities for prostate cancer including radical prostatectomy (26%), chemotherapy (31%), radiation therapy (brachytherapy or external beam, 58%), and hormonal therapy (82%). A mean number of 3.7 medical comorbidities (range = 0–9, SD = 2.43) was reported with most men (n = 40; 78%) currently not taking sleep medication.

3.2. Insomnia severity

Scores on the ISI ranged from 0 to 26 with a mean of 9.9 (SD = 6.8), which suggests that many of the men were having sleep difficulties. Twenty-seven men (53%) were noted to have clinically significant insomnia (mean ISI score ≥10). An analysis of ISI items revealed that 45% (n = 23) experienced difficulty initiating sleep and that 55% (n = 28) had problems maintaining their sleep. Nineteen men reported having both indicators of insomnia. When men (n = 12) complained about sleep problems to their health care provider, almost all were prescribed sleep medication and given advice such as "do not watch television late and avoid drinking caffeinated beverages." The men who complained to their health care provider about their sleep problem had an ISI mean score of 14.8 (SD = 5.9).

3.3. Depressive symptoms

Participant scores on the CES-D revealed a mean of 10.0 (range = 0–21, SD = 4.2), which indicated that many men were experiencing symptoms of depression. Twenty-six (51%) participants had a clinically significant level of depression (score ≥10). Further analyses indicated that of the 27 men identified as having clinically significant insomnia, 14 (52%) also had significant symptoms of depression.

3.4. Cancer-related distress

Scores on the IES revealed a mean of 10.9 (range = 7–23, SD = 4.4). Individual-item means ranged from 0.34 ("pictures about cancer popped into my mind") to 1.32 ("I thought about cancer when I didn't mean to").

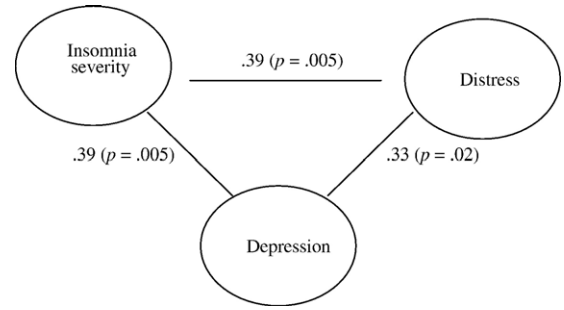

Fig. 1. Correlations among study variables.

3.5. Correlations among sample characteristics and variables

Pearson's product–moment correlations were generated to explore relationships among insomnia severity, depression, and distress with the demographic and clinical characteristics of the participants. Statistically significant relationships were found for participant age with depression (r = −.31, p = .03) and distress (r = −.30, p = .03) and for radiation therapy with insomnia severity (r = .31, p = .03) and depression (r = .37, p = .01). Correlational analyses among the three study variables revealed significant positive relationships between insomnia severity and depression, between insomnia severity and distress, and between depression and distress (Fig. 1).

4. Discussion

This exploratory study identified that greater than 50% of the participants had clinically significant insomnia, which is higher than the rate found in most prior studies involving patients with cancer. This may be due in part to the characteristics of the group studied, in which half of the sample had advanced-stage disease and all were receiving some type of treatment. One of the few studies that has focused on sleep quality in patients with advanced cancer found that 74% (n = 102) of the participants were "poor sleepers" (Mystakidou et al., 2007). Patients with cancer in the later stages of disease have been rarely studied in relation to insomnia and its correlates, and research into this area of inquiry is greatly needed. Prostate cancer treatment is known to have side effects that can impact sleep, and in particular, those participants in this study who received radiation therapy reported higher levels of insomnia severity. Hervouet et al. (2005) found that patients treated with radiotherapy had higher levels of clinically significant insomnia (n = 137; 35%) compared to men receiving a radical prostatectomy (n = 84; 30%). Furthermore, this sample had a high number of comorbidities typically seen in veteran patients, and insomnia is often comorbid with psychiatric and medical conditions (Stepanski & Rybarczyk, 2006). Implications for

nursing indicate the importance of identifying and implementing interventions for men with prostate cancer who are beginning to experience sleep problems and, in particular, those who are receiving radiation therapy. The nursing goal would be to reduce the insomnia before it becomes clinically significant and chronic.

When men complained of sleep problems to their health care provider, most were prescribed sleep medication; yet, many still reported having insomnia. It appears that patient complaints of a sleep difficulty often receive minimal treatment attention other than pharmacological intervention. This finding underscores the need for alternate nonpharmacological therapies such as cognitive–behavioral therapy, which has a strong evidence base (Morin et al., 2006) and has shown to be a promising treatment for significantly improving sleep in patients with breast cancer who have insomnia (Epstein & Dirksen, 2007).

Results indicated that 51% of the men had a clinically significant level of depressive symptoms, which was at the higher end of the range reported prior for patients with prostate cancer. The number of participants with advanced-stage disease may have influenced these higher rates, which is supported by results from one study that indicated that men with advanced disease were significantly more depressed than those with early-stage disease (Lintz et al., 2003). Perhaps the high number of comorbidities in the sample also contributed to the elevated rate of depression found in this study. It has been noted that men who appear at highest risk for depression also report greater prostate cancer symptoms and treatment side effects (Bennett & Badger, 2005). Whether men who received radiation therapy, which was linked in this study to greater depressive symptoms, also had more treatment side effects is not known. Further study regarding treatment side effects (frequency and duration) will help in quantifying the relationship between type of treatment and its impact on depression. The role of the nurse in screening and facilitating treatment for depression is essential, given the high prevalence of depression found in this study.

The level of distress related to cancer appeared to be in the moderate range (mean IES = 10.9) when compared to the few prior studies that have examined distress in women with breast cancer. Specifically, women with advanced breast cancer had higher levels of distress (mean IES = 13.2; Butler, Koopman, Classen, & Speigel, 1999) than women with nonmetastatic disease (mean IES = 7.4; Cordova et al., 1995). It would be of interest to explore what factors in addition to insomnia and distress are related to distress in prostate cancer. In the study by Butler et al. (1999), women with the highest levels of distress reported having an aversive social environment and a past life history perceived as stressful.

Older participants reported less depressive symptoms and distress. Across various types of cancer, younger patients report poorer psychological adjustment than older patients (e.g., Dirksen & Erickson, 2002), which may be associated with greater cancer-related distress. In particular, younger patients with prostate cancer have been noted to have higher rates of depression and distress (Lintz et al., 2003). Perhaps a sense of heightened stress exists to a greater extent in younger men who have more pressing concerns related to finances, family, and treatment side effects (e.g., urinary and sexual problems) than older men. The age of the patient should be considered in the plan of care, with special consideration given to younger patients who appear to have greater psychological need.

Study results suggesting that stage of cancer, number of comorbidities, time since diagnosis, and type of treatment other than radiation therapy (e.g., chemotherapy, prostatectomy, and hormonal therapy) were not related to insomnia, depression, or distress were supported by prior studies (e.g., Gift, Stomel, Jablonski, & Given, 2003). These relationships, however, are not clearly defined because other studies have found that these patient characteristics can influence the reporting of these symptoms (e.g., Reyes-Gibby, Aday, Anderson, Mendoza, & Cleeland, 2006). The inconclusive state of the current literature may be due in part to the variety of ways symptoms are measured, the different types and stages of cancer being examined, and the cross-sectional design of most of these studies that capture insomnia at only one moment in time. Further study should offer additional insight into the demographic and clinical characteristics that may impact insomnia in this population, thereby providing guidance in targeting those individuals at higher risk for the development of an insomnia problem.

As expected, significant relationships were found among insomnia severity, depression, and distress. The comorbidity of these conditions is not uncommon in the general population; insomnia is often found in conjunction with at least one other psychological disorder including depression (National Institutes of Health, 2005). The coexistence of insomnia, depression, and distress has also been reported in prior studies in persons with cancer, especially breast cancer (e.g., Epping-Jordan, Compas, Osowiecki, Oppediasano, Gerhardt, Primo et al., 1999). The complex nature of the relationships among these variables has yet to be clearly explicated, which may be due in part to the dynamic changes that occur within individuals during the experience of having cancer. Longitudinal research is recommended to determine whether the rather high levels of insomnia and depression seen in this cross-sectional study continue across time concurrently. This information is vital to nursing if patient care is to be positively impacted through the development and implementation of an intervention that targets a reduction in insomnia severity and depression.

5. Conclusions

As the population of persons diagnosed with prostate cancer continues to grow, it becomes increasingly important that we possess greater knowledge of the symptoms experienced by this population, particularly insomnia,

depression, and distress, of which limited information is known. This exploratory study suggests that clinically significant insomnia is experienced by many men, which is related to depressive symptoms and distress. Younger men and those receiving radiation therapy indicated higher levels of depression and distress, suggesting that nurses caring for these men may want to consider earlier recognition and intervention to decrease the severity of these symptoms.

Acknowledgments

This article is the result of work supported with resources from the Carl T. Hayden Veterans Affairs Medical Center and Clinics, Phoenix, AZ. The authors thank Joanne Harrington, RN, MSN, APRN, BC, who works at this facility, for her clinical expertise.

References

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders*. (4th ed.). Washington, DC: Author.

American Sleep Disorders Association. (2005). *The international classification of sleep disorders, revised: Diagnostic and coding manual*. (2nd ed.). Rochester, MN: Author.

Andresen, E. M., Malmgren, J., Carter, W., & Patrick, D. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D (Center for Epidemiologic Studies Depression Scale). *American Journal of Preventive Medicine 10*(2), 77–84.

Bastien, C. H., Vallières, A., & Morin, C. M. (2001). Validation of the Insomnia Severity Index as an outcome measure for insomnia research. *Sleep Medicine 2*, 297–307.

Bennett, G., & Badger, T. (2005). Depression in men with prostate cancer. *Oncology Nursing Forum 32*(3), 545–556.

Butler, L., Koopman, C., Classen, C., & Speigel, D. (1999). Traumatic stress, life events, and emotional support in women with metastatic breast cancer: Cancer-related traumatic stress symptoms associated with past and current stressors. *Health Psychology 18*, 555–560.

Cordova, M., Andrykowski, M., Kenady, D., McGrath, P., Sloan, D., & Redd, W. (1995). Frequency and correlates of posttraumatic-stress-disorder-like symptoms after treatment for breast cancer. *Journal of Consulting and Clinical Psychology 63*(6), 981–986.

Dirksen, S., & Erickson, J. (2002). Well-being in Hispanic and non-Hispanic White survivors of breast cancer. *Oncology Nursing Forum 29*(5), 820–826.

Epping-Jordan, J., Compas, B., Osowiecki, D., Oppedisano, G., Gerhardt, C, Primo, K., et al. (1999). Psychological adjustment in breast cancer: Processes of emotional distress. *Health Psychology 18*(4), 315–326.

Epstein, D., & Dirksen, S. (2007). Randomized trial of cognitive–behavioral intervention for insomnia in breast cancer survivors. *Oncology Nursing Forum 34*(5), E51–59.

Gift, A., Stommel, M., Jablonski, A., & Given, W. (2003). A cluster of symptoms over time in patients with lung cancer. *Nursing Research 52* (6), 393–400.

Hervouet, S., Savard, J., & Simard, S. (2005). Psychological functioning associated with prostate cancer: Cross sectional comparison of patients treated with radiotherapy, brachytherapy, or surgery. *Journal of Pain and Symptom Management 30*(5), 474–484.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. *Psychosomatic Medicine 41*(3), 209–218.

Kangas, M., Henry, J., & Bryant, R. (2002). Posttraumatic stress disorder following cancer: A conceptual and empirical review. *Clinical Psychology Review 22*, 499–524.

Lintz, K., Moynihan, C., Steginga, S., Norman, A., Eeles, R., Huddart, R., et al. (2003). Prostate cancer patients' support and psychological care needs: Survey from a non-surgical clinic. *Psycho-oncology 12*, 769–783.

Morin, C. M., Bootzin, R. R., Buysse, D. J., Edinger, J. D., Espie, C. A., & Lichstein, K. L. (2006). Psychological and behavioral treatment of insomnia: Update of the recent evidence (1998–2004). *Sleep 29*, 1398–1414.

Mystakidou, M., Parpa, E., Tsilika, E., Pathiaki, M., Patiraki, E., & Galanos, A, et al. (2007). Sleep quality in advanced cancer patients. *Journal of Psychosomatic Research 62*(5), 527–533.

National Institutes of Health. (2005). *Cancer trends progress report—2005 survival update*. Available at: www.progressreport.cancer.gov (accessed May 25, 2007).

Roth, A. J., Kornblith, A., Batel-Copel, L., Peabody, E., Scher, H., & Holland, J. (1998). Rapid screening for psychologic distress in men with prostate carcinoma. *Cancer 82*, 1904–1908.

Reyes-Gibby, C., Aday, L., Anderson, K., Mendoza, T., & Cleeland, C. (2006). Pain, depression, and fatigue in community-dwelling adults with and without a history of cancer. *Journal of Pain and Symptom Management 32*(2), 118–128.

Savard, J., & Morin, C. (2001). Insomnia in the context of cancer: A review of a neglected problem. *Journal of Clinical Oncology 19*, 895–908.

Savard, J., Simard, S., Hervouet, S., Ivers, H., Lacombe, L., & Fradet, Y. (2005). Insomnia in men treated with radical prostatectomy for prostate cancer. *Psycho-oncology 14*, 147–156.

Stepanski, E. J., & Rybarczyk, B. (2006). Emerging research on the treatment and etiology of secondary or comorbid insomnia. *Sleep Medicine Reviews 10*, 7–18.