



A descriptive study of functions, symptoms, and perceived health state after radiotherapy for prostate cancer

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A B S T R A C T

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Purpose: To explore the impact of prostate cancer treatment on: (a) the experience of symptoms (i.e. sexual, urinary, and bowel), and (b) perceived health state of men with prostate cancer one month following their radiation treatment.

Methods: A prospective pre-test–post-test descriptive survey was conducted on a convenience sample of 73 men with prostate cancer who were recruited from a Regional Cancer Centre in Southwestern Ontario, Canada. Participants receiving radiation treatment (brachy therapy, high dose radiation [HDR] and external beam radiation [EBR], or EBR alone) completed a questionnaire that elicited information pertaining to quality of life (QOL), symptom experiences, and perceived health state prior to, and one month after completion of their radiation treatment.

Results: Post-treatment scores showed increased problems with urinary bother ($p < 0.001$) and function ($p < 0.001$), bowel bother ($p = 0.002$) and function ($p = 0.001$), and sexual function ($p < 0.001$). The results also suggested that urinary bother, sexual bother, and pain were independent predictors of the perceived health state of participants after radiation treatment.

Discussion: Our findings suggest that prostate cancer treatment presents a challenge with regard to symptom experiences and perceived health state in men with prostate cancer. Therefore, strategies for patient education to assist men to cope with their symptoms and to provide them with support in the initial weeks following treatment are discussed.

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Background

Despite recent reports that suggest a decrease in the incidence of prostate cancer (2010), it remains one of the most commonly diagnosed cancers in men (Jemal et al., 2010; The Canadian Cancer Society, 2010). The Canadian Cancer Society (2010) and the American Cancer Society (2010) estimate that prostate cancer accounts for 11% of all cancer related deaths among men, making it second only to lung cancer as the most common cancer related cause of death. Advances in early diagnosis, as well as an increasing array of treatment modalities (Choi & Hung, 2010; Leibel et al., 2003; Mangar et al., 2005; Tangney et al., 2010), contribute to improved health outcomes and increased survival among this patient population (Bellmunt et al., 2009). While such treatment modalities contribute to improved health outcomes, they also have the potential to influence the functional abilities and quality of life

(QOL) of men living with prostate cancer (Eton & Lepore, 2002). However, little is known about the factors influencing patients' perceptions of their health state.

Prostate cancer is often diagnosed as a result of routine screening tests such as prostate specific antigen (PSA) or digital rectal examination (DRE), when patients are still asymptomatic. Consequently, the development of symptoms that commonly occur as a result of treatment may be particularly alarming. Without adequate understanding about what to expect, patients may interpret treatment-related symptoms as an indication that the treatment is doing more harm than good, or that their cancer, or health state, is worsening. Therefore, it is important that the effect of prostate cancer treatment on patients' symptom experiences and their perceived health state is understood, so that patient and family education plans can carefully consider such effects without escalating the experience of an already high anxiety situation.

Though many studies explored the effects of various types of radiation therapy on urinary, sexual, and bowel function and/or bother, few studies (Guedea et al., 2009; Litwin et al., 2007; Pinkawa et al., 2009; Tanaka et al., 2010) focused on the symptom

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experiences between the time of diagnosis and one month following completion of radiation therapy. Further, numerous studies have examined the impact of radiation therapy on health-related QOL among patients with prostate cancer. However, very little is known about its impact on men's perceived health state. In fact, we were unable to find any research pertaining to the factors influencing the perceived health state of prostate cancer patients receiving radiation treatment.

Despite the lack of literature concerning the factors influencing health state among prostate cancer patients, two conflicting studies (Clark et al., 2003; Rogers et al., 2008) compared the perceived health state between men with, and without, a history of prostate cancer. While Clark et al. (2003) reported no difference in the perceived health state between men with and without prostate cancer, Rogers et al. (2008) found that men with a history of prostate cancer were almost twice as likely to report poor or fair health. Unfortunately, neither of these two studies explored the factors that predict health state. Hence, the purposes of this study were to: (a) examine the effects of radiation treatment (i.e., brachy therapy, HDR/EBR, or EBR alone) on symptom experiences of prostate cancer patients one month after completion of treatment, and (b) explore the factors associated with perceived health state one month after radiation treatment.

Methods

Design

A prospective descriptive survey was conducted to examine the perceived health state and symptom experiences of men with prostate cancer one month after receipt of radiation treatment. A convenience sample of 73 men with prostate cancer was recruited from a Regional Cancer Center that provides a wide range of cancer related services in Southwestern Ontario. Eligibility to participate in the study required that participants: (a) had a confirmed diagnosis of prostate cancer, (b) were about to begin radiation treatment (brachy therapy, HDR/EBR or EBR alone), (c) were able to read and understand English, and (d) were able to provide informed consent.

Procedure

Following research ethics clearance to conduct the study by the respective Research Ethics Boards, the principal investigator (PI) and research assistant (RA) attended a routine orientation class that was delivered by a nurse at the Cancer Centre, who provided patients with an overview of their course of treatment (i.e., type, times, and place of treatments). At the end of the class, the researchers provided potential participants with an overview of the study, described the role and expectations of participants, provided answers to questions, and invited patients to enroll in the study. Patients were also given letters of information that reinforced the verbal explanation about the study. Patients who provided written consent were given pre-treatment surveys (described below) and were offered the opportunity to complete and return them on-site, or were provided with pre-stamped and addressed envelopes to return by mail. The pre-treatment survey took approximately 20 min to complete. One month after completion of their radiation treatment, the RA telephoned participants at their homes, where they completed the post-treatment questionnaire via telephone interview. With the exception of the demographic section, which was not included in the post-treatment survey, content in both the pre- and post-surveys was identical. Given that the length of treatment varied according to the type of treatment, those who received brachy therapy completed their post-treatment surveys 4

weeks after completion of their treatment. The HDR/EBR group completed their surveys 4 weeks following their 4–6 week treatment protocol, while the EBR group completed their surveys 4 weeks following 6–8 weeks of treatment.

Instrumentation

The survey questionnaire consisted of two major components. The first was a demographic questionnaire that elicited information pertaining to age, marital status, living arrangements, history of cancer, stage of cancer, and mode of cancer detection. The second component of the questionnaire included measures of health-related QOL and symptomatology. Health-related QOL was measured using *The European Quality of Life Scale (EuroQol; EQ-5D)* (Cheung et al., 2010), a brief standardized instrument that provides a generic profile of patient function pertaining to five domains (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression) and a rating of global health state. For each domain, respondents selected one of three statements that best described their current state (e.g., responses to the pain/discomfort domain were: no pain/discomfort, moderate pain/discomfort, and extreme pain/discomfort). Although the scale is usually reported as a global measure, we chose to treat each domain as a single item measure. This decision was based on our intent to assess each of the specific functional domains in terms of its contribution to health state. Each of these scales ranged from 1 (no problem at all) to 3 (extremely affected by the problem). The global rating of perceived health state was measured using the vertical visual analog scale (VAS) of the EQ-5D, on which participants indicated their current health state by marking the scale, which ranged from 0 (worst imaginable health state) to 100 (best imaginable health state). Our test–retest reliability of the health state VAS yielded a Pearson correlation coefficient of 0.72, indicating good reliability.

Symptom experiences and functions were measured using the *Expanded Prostate Cancer Index Composite (EPIC)* survey (Wei et al., 2000), a measure of health-related QOL that is specific to patients with prostate cancer. The 50-item EPIC evaluates patient *function* and *bother* in each of four domains (urinary, bowel, sexual, and hormonal). Each item on the EPIC was measured using a 5-point standardized likert scale ranging from 1 to 5, which were later transformed to their weighted scores that ranged from 0 to 100. Responses were coded such that higher scores indicated better function and less bother. This scoring approach was performed as per the published guidelines for the EPIC (Sanda et al., 2002).

In the current study, the 50-item EPIC was modified by reducing the number of items to 26. All items in the urinary and bowel domains were retained. However, due to the sensitivity of questions regarding sexuality, we deleted 4 of the original 9 items pertaining to sexual function (items that were deleted pertained to quality and frequency of erections, frequency of sexual intercourse, and frequency of waking with an erection). Only one of the original 4 items that pertained to sexual bother (focused on how problematic sexual functioning or lack of functioning was for the man) was retained. Given that the study focused on radiation treatment only, items pertaining to the hormonal domain were not included in this study.

Wei et al. (2000) reported high internal consistency (Cronbach alpha ≥ 0.82) and test–retest reliability ($r \geq 0.80$) for each of the domain scales, and suggested that internal consistency and test–retest reliability were satisfactory when the domains were further reduced to function and bother subscales. In our sample, the Cronbach alpha coefficients were 0.75 for urinary function, 0.89 for urinary bother, 0.81 for bowel function, 0.93 for bowel bother, and 0.95 for sexual function. Internal consistency testing was not needed for the single sexual bother item.

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