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Positive and negative affect and prostate cancer-specific anxiety in Taiwanese patients and their partners

Ching-Hui Chien[a,*], Cheng-Keng Chuang[b], Kuan-Lin Liu[b], Chun-Te Wu[c], See-Tong Pang[b], Ying-Hsu Chang[b]

[a] College of Nursing, National Taipei University of Nursing and Health Sciences, Taipei, Taiwan
[b] Division of Urology, Department of Surgery, Chang Gung Memorial Hospital at Linkou, College of Medicine, Chang Gung University, Tao-Yuan, Taiwan
[c] Division of Urology, Department of Surgery, Chang Gung Memorial Hospital at Keelung, College of Medicine, Chang Gung University, Tao-Yuan, Taiwan

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ABSTRACT

Purpose: Few studies have examined positive and negative affect and prostate cancer-specific anxiety in prostate cancer patients and their partners. Thus, this study explored positive and negative affect and prostate cancer-specific anxiety as well as their associated factors in prostate cancer patients and their partners.

Method: A prospective repeated-measures design was used. Data were collected from 48 prostate cancer patients and their partners when treatment was determined (before treatment) and at 6, 10, 18, and 24 weeks thereafter. The questionnaire included the Expanded Prostate Cancer Index Composite, the Dyadic Adjustment Scale, the Positive and Negative Affect Schedule, and the Memorial Anxiety Scale for prostate cancer. Generalized estimating equations were used for statistical analysis.

Results: Patients with lower relationship satisfaction experienced lower positive affect ($\beta = 0.279$) and higher negative affect ($\beta = -0.323$), and their partners experienced higher prostate specific antigen-related anxiety ($\beta = -0.014$). The presence of strong hormonal symptoms aggravated negative affect ($\beta = -0.010$) and prostate cancer-related anxiety ($\beta = -0.009$), but living with children and grandchildren improved prostate cancer-related anxiety ($\beta = -0.445$) and fear of cancer recurrence in patients ($\beta = -0.232$).

Conclusions: There is an interaction between the prostate cancer-specific anxiety experienced by patients and that experienced by their partners. The emotional state of patients and their partners should be evaluated, and understandable information should be provided. Care strategies should include encouraging adult children to participate in the patients' care plan, symptom management, and the teaching of coping skills.

1. Introduction

In 2015, prostate cancer ranked first as the most common cancer in males, and fifth as a cause of cancer death worldwide (Fitzmaurice et al., 2017). Further, this type of cancer occurs in 90.2% of patients aged 55 years and above (Howlader et al., 2017). The median age of prostate cancer patients in Taiwan and the United States is 73 (Health Promotion Administration, Ministry of Health and Welfare, Taiwan, 2017) and 66 (Howlader et al., 2017) years, respectively. Further, research shows that the dependence of men on their partners gradually increases with age (Olsen et al., 1991; Segrin and Badger, 2010) and that the partner of a patient with prostate cancer is an important companion and caregiver (Segrin and Badger, 2010). The diagnosis and treatment of cancer may result in various types of emotional distress in patients and their partners, including general anxiety (Chien et al., 2018; Kohler et al., 2014; Tavlarides et al., 2013; Watts et al., 2015), depression (Chien et al., 2018; Kohler et al., 2014; Watts et al., 2015), negative affect (Knoll et al., 2012; Lehto et al., 2017, 2018; Thorsteinsdottir et al., 2017; Voogt et al., 2005), and prostate cancer-specific anxiety (Mehnert et al., 2007; Pearce et al., 2015; Tavlarides et al., 2013), the latter two of which are associated with decreased quality of life (Segrin et al., 2012; Taoka et al., 2014; Tavlarides et al., 2013). In addition, there is an interaction between the emotional states of the patient and his partner (Segrin et al., 2012).

Patients with prostate cancer experience poor quality of life due to depression and anxiety, and when their partners also experience depression and anxiety, the quality of their sexual lives suffers as well (Segrin et al., 2012). Higher prostate cancer-specific anxiety, in

* Corresponding author. College of Nursing, National Taipei University of Nursing and Health Sciences, No.365, Ming-te Road, Peitou District, Taipei, Taiwan.
E-mail addresses: chinghui@ntunhs.edu.tw (C.-H. Chien), chuang89@cgmh.org.tw (C.-K. Chuang), kuanlin@cgmh.org.tw (K.-L. Liu), chuntewu@cgmh.org.tw (C.-T. Wu), jacobpang@cgmh.org.tw (S.-T. Pang), anatomy@cgmh.org.tw (Y.-H. Chang).

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particular, leads to reduced sexual satisfaction and depression (Tavlarides et al., 2013). Positive affect, however, helps to relieve symptoms of physical discomfort (Pressman and Cohen, 2005) and improves the body's ability to repair itself (Sepah and Bower, 2009). Moreover, prostate cancer patients exhibit improved quality of life when they and their partners show significant positive affect (Segrin et al., 2012). The positive and negative affect and prostate cancer-specific anxiety of both the patient and his partner should therefore be considered during a patient's treatment period.

Previous studies have focused mainly on the negative affect of prostate cancer patients and their partners (Chambers et al., 2013; Chien et al., 2018; Christie et al., 2009; Fagundes et al., 2012; Hyde et al., 2018; Keller et al., 2017; Knoll et al., 2012; Park et al., 2010; Punnen et al., 2013; Thorsteinsdottir et al., 2017), but few studies have focused on their positive emotions (Keller et al., 2017; Knoll et al., 2012; Segrin et al., 2012). In addition, the prostate cancer-specific anxiety experienced by patients' partners has not yet been investigated. Thus, we aim to explore the effects of individual, partner, and common factors on positive and negative affect and prostate cancer-specific anxiety in prostate cancer patients and their partners. We hypothesized that negative affect and prostate cancer-specific anxiety of patients are higher than those of their partners, whereas positive affect of patients is lower than that of their partners. Individual, partner (including positive and negative affect), and common factors influence positive and negative affect in patients with prostate cancer and their partners. Similarly, individual, partner (including prostate cancer-specific anxiety), and common factors influence prostate cancer-specific anxiety in patients and their partners.

1.1. Positive and negative affect

Positive affect refers to the degree to which a person enjoys life and feels enthusiastic, active, strong, and energetic (Watson and Tellegen, 1985). A person with a higher degree of positive affectivity possesses higher levels of energy and focus as well as participates enthusiastically in activities (Watson et al., 1988). Negative affect refers to the degree to which a person feels sad, distressed, fearful, hostile, anxious, nervous, and scornful (Watson and Tellegen, 1985). Studies show that negative affect influences the support acquired and quality of life in patients with prostate cancer and could be an indicator for intervention (Keller et al., 2017; Voogt et al., 2005).

Newton et al. (2007) performed a retrospective cross-sectional study of patients with localized prostate cancer in Australia and found that their positive and negative affectivity was similar to that of the general healthy population. Similarly, Benedict et al. (2015) conducted a cross-sectional study on patients with Stages III and IV prostate cancer who received hormone therapy in the United States and noted that their positive affect was greater than their negative affect, although the scores for both were lower than in patients with localized prostate cancer. Segrin and Badger (2010) found that the members of the social networks of breast cancer and prostate cancer patients (partners, children, friends, and parents) who had good levels of relationship satisfaction with the patient experienced higher positive and lower negative affect. Studies on other populations with different cancers have further indicated that positive affect is lower in older patients (Voogt et al., 2005) and patients with lower relationship satisfaction (Knoll et al., 2012) but also that negative affect is higher in younger patients (Voogt et al., 2005) and patients with lower relationship satisfaction (Knoll et al., 2012).

1.2. Prostate cancer-specific anxiety

Prostate cancer-specific anxiety includes prostate cancer-related anxiety, prostate specific antigen-related anxiety (PSA-related anxiety), and fear of cancer recurrence (Roth et al., 2003). The prostate cancer-specific anxiety of patients who receive active surveillance (AS) has been widely investigated (Pearce et al., 2015; van den Bergh et al., 2010; Wilcox et al., 2014), and other research has focused on patients who receive different treatments for prostate cancer (Mehnert et al., 2007; Tavlarides et al., 2013, 2015; Thorsteinsdottir et al., 2017). Few studies, however, have focused on the prostate cancer-specific anxiety of both the patients and their partners simultaneously.

A cross-sectional study on prostate cancer patients in Germany who received a radical prostatectomy showed that 53% of the patients experienced distress and/or prostate cancer-related anxiety. Finally, the factors that affect prostate cancer-related anxiety include sexual and sleep disorders, pain, fatigue, and nausea (Mehnert et al., 2007). Tavlarides et al. (2013) conducted a study of patients newly diagnosed with prostate cancer in USA and who received a radical prostatectomy revealed that younger patients and those of non-Caucasian race exhibit higher prostate cancer-specific anxiety. Other research has shown that patients with postoperative PSA > 0.1 ng/mL, tumor stage $\geq$ 2C, and Gleason score > 6 experience higher prostate cancer-specific anxiety (Tavlarides et al., 2015). Patients of younger age, with worse physical health and pain, and who live alone display higher negative intrusive thoughts about prostate cancer (Thorsteinsdottir et al., 2017).

2. Methods

2.1. Research design and sample

The study was conducted in two stages. First, a prospective repeated-measures design with purposive sampling was used to recruit patients with prostate cancer and their partners who were receiving standard care. In this first stage, the data were used to examine the hypothesis and to assign a control group to compare the effectiveness of the intervention in the second stage. In the second stage, experimental design with random assignment were used to examine the effectiveness of the two types of psychosocial interventions, involving a comparison with the data of the first stage (control group). The research data served as the first-stage data and were collected from August 2015 to December 30, 2016. These data were not affected by the psychosocial interventions. This allows us to understand the relationship between the variables in a natural situation. Eligible prostate cancer patients and their partners were recruited (with their consent) from the outpatient urology departments of two medical centers in north and south Taiwan. The inclusion criteria for patients were as follows: (1) were first diagnosed with early prostate cancer with TNM staging from I to III who had not started the treatment; (2) decided to receive radical prostatectomy or radiation therapy; and (3) possessed conscious awareness and could communicate in Mandarin. The inclusion criteria for partners were as follows: (1) exhibited domestic partnership with patients involved in the study; and (2) possessed conscious awareness and could communicate in Mandarin. The exclusion criteria for patients or their partners were as follows: (1) a history of other cancers in addition to prostate cancer; (2) an Eastern Cooperative Oncology Group Performance Status level $\geq$ 2; (3) unaware of cancer diagnosis; (4) suffered from mental illness, such as schizophrenia, depression, anxiety disorder, or dementia; or (5) visually impaired and unable to read.

2.2. Data collection

During the study period, potential cases were referred to the research assistant by the urologist when patients decided on their treatment. For patients and their partners who visited the hospital together, the research assistant assessed whether they satisfied the inclusion criteria through an interview and a review of their medical records. For patients and their partners who met the criteria, the research assistant explained the objective and content of the study and invited them to participate in the study. When a patient visited the hospital alone, the research assistant assessed whether the patient met the inclusion criteria through an interview and review of his medical records. For the