



Associations between social support, prevalent symptoms and health-related quality of life in Chinese women undergoing treatment for breast cancer: A cross-sectional study using structural equation modelling



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A B S T R A C T

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Background: There is little in the literature exploring the inter-relationship of social support, prevalent symptoms and health-related quality of life (HRQoL) among breast cancer patients. This study examines the inter-relationships among the three variables using the 'Theory of Unpleasant Symptoms' as a framework. **Methods:** 279 Chinese breast cancer patients undergoing treatment were recruited for face-to-face interviews. The instruments used were Chinese versions of the Brief Fatigue Inventory, Brief Pain Inventory, Hospital Anxiety and Depression Scales, Medical Outcomes Study Social Support Survey and Functional Assessment of Cancer Therapy for Breast Cancer. **Results:** Goodness-of-fit and misfit indices were obtained for the final model (SRMR = 0.034, robust RMSEA = 0.051 and robust CFI = 0.981), and the results showed that social support had large total effects on social/family (total effect = 0.704, $P < 0.05$) and functional well-being (total effect = 0.450, $P < 0.05$), but a minimal effect on the breast cancer scale (total effect = 0.036, $P > 0.05$). **Conclusions:** The inter-relationships among the three variables give us a better understanding of breast cancer patients' experience and provide guidance for developing effective strategies to improve their HRQoL and relieving unpleasant symptoms.

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Introduction

Breast cancer is the most prevalent invasive cancer among women in Hong Kong. In 2009, there were 2945 new cases diagnosed and 555 deaths from the disease (Hong Kong Hospital Authority Cancer Registry, 2011). It was also the sixth major cause of death from cancer in China in 2006 (Chen and Kong, 2010). With recent advances in breast cancer treatment, the survival rate has greatly increased, with a prolonged lifespan, but the cancer- and treatment-related symptoms are still highly distressful for such patients.

According to the National Institute of Health (NIH), fatigue, pain and depression are the most common cancer- and treatment-related symptoms experienced by cancer patients (Patrick et al., 2003). They correlate significantly with each other and always present in a cluster (So et al., 2009). Additionally, anxiety is one of the major emotions in

cancer patients to affect the patient's health-related quality of life (HRQoL) adversely (National Cancer Institute, 2011). According to the previous research we conducted among Chinese patients receiving breast cancer treatment, most had a mild to moderate level of fatigue and pain, while 21% and 36% respectively reported anxiety and depression disorder. Patients receiving chemotherapy experienced higher levels of these symptoms and lower HRQoL than those not receiving such treatment (So et al., 2010).

Several studies have found that social support is a major positive factor to affect patients' HRQoL and their experience of cancer- and treatment-related symptoms (Jones et al., 2012; Manning-Walsh, 2011). Sherbourne and Stewart (1991) concluded that the type of social support that patients perceived could be generalised into four categories (a) emotional/informational support, (b) tangible support, (c) affectionate support and (d) positive social interaction. There have been numerous studies investigating the associations between different aspects of social support, symptom distress and HRQoL. Higher social support is associated with all domains of

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HRQoL, except physical well-being (Kwan et al., 2010). Breast cancer patients who have received a psycho-educational support programme enjoy better emotional, functional and social/family well-being and have higher scores on the breast cancer-specific subscale than those who have not (Park et al., 2012). Adequate emotional and informational support predicts better global health and functionality and lower intensity of symptoms in Brazilian breast cancer patients (Ferreira et al., 2011). Furthermore, Caucasians breast cancer patients, who receive more personal support from friends and family, report less symptom distress and a better overall HRQoL (Manning-Walsh, 2005).

Chinese people may have different beliefs and coping strategies because of cultural differences which could affect their experience of cancer. Confucianism is one of the major fundamental philosophies that guide Chinese belief and behaviour, and emphasises *ren*, *yi* and *li*, *li* representing the proper way a person should behave in his social life (Kupperman, 1999). While Westerners emphasise religious belief in coping with cancer, Chinese patients emphasise family support and caring. Beliefs and values related to the family are very important to Chinese. Zeng et al. (2011) found that some cancer patients were afraid of 'being a burden on the family', and the change in household roles and in responsibility for daily chores had a negative effect on their social well-being (Zeng et al., 2011). Liu et al. (2011) found that 'fear of family being harmed' contributed significantly to the severity of depressive symptoms, while objective social support (behaviour that directly helps the person in need) significantly decreased it in breast cancer patients. Patients with adequate social support were found to have less anxiety and depressive symptoms. These features, concerning cultural beliefs and social support systems, may affect the Chinese patient's emotions, ability to cope with disease and HRQoL.

From the above findings, it is clear that social support, symptoms and HRQoL are the three major variables affecting the experience of breast cancer. However, previous studies usually took the situation as a simple associative relationship between two variables, or studied the variables as a single item instead of one with multiple dimensions (Manning-Walsh, 2005; Park et al., 2012). There is a lack of research investigating in detail inter-relationships among different domains of the three major variables. Additionally, studies conducted in Chinese communities are limited but, since Chinese culture differs from that of other ethnic groups, findings from such groups may not be directly applicable in the Chinese context.

Theoretical framework

Lenz et al. (1997) composed a model called the 'theory of unpleasant symptoms' (TOUS) to explain the correlation between three major components occurring in a patient: (1) the symptoms experienced by the patient, (2) the factors influencing the symptoms (physiological, psychological and situational) and (3) the consequences of the symptoms (functional status, cognitive functioning and physical performance). According to the model, the influencing factors could affect the nature of the symptoms, while the symptoms could change their own consequences. Symptoms could also mediate or moderate the relationship between the influencing factors and the consequences. A feedback mechanism is also present in the model whereby changes in the patient's performance level may have a loop effect on the influencing factors. Different symptoms will also interact with each other to affect their intensity, duration, quality and resulting level of distress. Physiological, psychological and situational factors will interact with each other as well to affect their own quality and quantity.

In this study, we adopted this model to examine the relationships between the major components experienced by breast cancer patients: social support, prevalent symptoms and HRQoL. We

incorporated social support into the situational domain of the influencing factor, prevalent symptoms into the symptom and HRQoL into the consequences of the symptoms in TOUS. If symptoms are present (i.e. more prevalent symptoms), the consequences of those symptoms would worsen (i.e. decreased HRQoL), while with more positive influencing factors present (i.e. adequate social support) the consequences of the symptoms would be improved (i.e. better HRQoL). In addition, prevalent symptoms could mediate the effect of social support on HRQoL, and social support may have a differential influence on the individual HRQoL dimension. Here, we hypothesised that social support was a latent variable with five indicators acting directly on the different domains of HRQoL, and indirectly via the four prevalent symptoms. The four symptoms and the five domains of HRQoL were assumed to be covaried respectively.

Methods

Participants

In 2007, potential participants were recruited from the out-patient sections of the clinical oncology departments, radiation therapy departments or breast centres of four public hospitals in Hong Kong, China. Inclusion criteria covered Chinese women of 18 or more, were diagnosed with breast cancer, had received surgery for the disease, were midway through their course of chemotherapy or radiation therapy, and were able to speak Cantonese. Exclusion criteria covered those who had difficulty in understanding the survey or communicating in Cantonese, had a medical history of psychiatric disorder, or had metastatic brain disease.

Procedures

The study was approved by the hospitals' Ethics Committees. Research staff approached potential participants and explained the purpose of the study. Data were collected by means of face-to-face interviews using a structured survey, after patient consent had been obtained.

Measures

Demographics

Age, marital status, educational attainment, employment status, monthly household income, religious belief and stage of cancer.

Fatigue

The Brief Fatigue Inventory – Chinese version (BFI-C), developed by Wang et al. and translated from the Mendoza et al. (1999) version of the BFI, was used to measure fatigue levels. BFI-C demonstrated good internal consistency and external validity in a sample of 249 Chinese cancer patients (Wang et al., 2004). The tool contains nine items measuring both the severity of fatigue and interference, both on an 11-point Likert-type scale (0 = no fatigue/does not interfere to 10 = fatigue as bad as you can imagine/completely interferes). The average score of all the BFI-C items was calculated to obtain a global fatigue score. In this study, we used BFI-C to measure the severity of the subjects' fatigue over the past seven days. For the entire scale, the Cronbach's alpha coefficient was 0.95.

Pain

The Brief Pain Inventory – Chinese version (BPI-C), developed by Wang et al. and translated from the Cleeland (1989) version of BPI, was used to measure pain levels. BPI-C demonstrated good reliability and validity in a sample of 147 Chinese patients with

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