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Psychometric properties of the Modified Breast Cancer Screening Beliefs Questionnaire among Mainland Chinese women

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ABSTRACT

Purpose: The aim of the study was to report the psychometric properties of the modified 'Breast Cancer Screening Beliefs Questionnaire' (BCSBQ) among women living in China.
Methods: A convenience sample of 494 women was recruited from community centres and out-patient clinics in Foshan city. Cronbach's alpha was used to assess internal consistency reliability. Criterion validity was examined by testing three pre-specified hypotheses and confirmatory factor analysis was conducted to study the factor structure.
Results: The results indicated that the modified BCSBQ has satisfactory validity and internal consistency. Cronbach's alpha of the three subscales ranged between 0.77 and 0.84. As hypothesized, the frequencies of breast self-examination and clinical breast examination were significantly associated with the subscales' score. Confirmatory factor analysis showed an adequate fit for the hypothesized three-factor structure with our data set.
Conclusions: The modified BCBSQ is a culturally appropriate, valid and reliable instrument for assessing the beliefs, knowledge and attitudes to breast cancer and breast cancer screening practices among women living in China. It can be used for providing health care professionals with insights into the development of breast cancer screening promotion programs.

1. Introduction

Historically, the rate of breast cancer in China was believed to be low. However, over the past two decades there has been an alarmingly rapid increase in the incidence of breast cancer among women in China. Not only has the rate of increase been twice as fast as global rates but it has been coupled with an earlier age of onset: statistics show that the peak age for breast cancer diagnosis in China is 45–55 (Fan et al., 2009) compared to 55–60 in the United States (American Cancer Society, 2013) and 65–69 in Australia (Cancer Australia, 2014). Advances in secondary prevention and treatment in Western countries have significantly improved five-year survival rates among Caucasian population to between 85% and 89% in the United Kingdom, the USA and in Australia (Allemani et al., 2015). In contrast, the five-year survival rates among Chinese breast cancer cases are only 55.75% (Zhu et al., 2014). This statistic strongly indicates breast cancer is a priority health issue for women living in China which calls for urgent attention.

Since early detection by means of screening is the most effective method of improving survival and reducing mortality rates (Cancer Research UK, 2016), much research effort has been directed to examining women's screening behaviours in order to achieve optimal participation in breast cancer screening practices (Baena-Cañada et al., 2014; Banegas et al., 2012; Kamimura et al., 2014). However, in Western countries, these efforts have been largely confined to Caucasian populations while Chinese immigrants tend to be under-served (Wang et al., 2009; Zhang et al., 2014). Compounding the problem is that culturally-based beliefs discourage immigrant Chinese women from undertaking cancer screening measures (Gonzalez et al., 2015; Kwok et al., 2012; Wang et al., 2009; Zhang et al., 2014). For example, some Chinese women believe that if they have no signs or symptoms of breast cancer, they have no need of mammography (Kwok et al., 2012; Zhang et al., 2014). Fatalistic attitudes towards cancer have also been

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found to be problematic in Chinese women in the USA (Gonzalez et al., 2015) and Australia (Kwok et al., 2012). Women holding such beliefs think that if fate has decreed they are to die of breast cancer, screening will not save their lives. Another key issue discouraging screening practices are Chinese women's feelings of embarrassment and modesty about having to expose their breasts during medical examinations and mammography (Wang et al., 2009; Zhang et al., 2014). Ironically, little is known about the breast cancer screening behaviours of women living in mainland China.

2. The Breast Cancer Screening Beliefs Questionnaire (BCSBQ)

The Breast Cancer Screening Beliefs Questionnaire (BCSBQ), developed by Kwok and colleagues (Kwok et al., 2010), was designed as a culturally-sensitive instrument to assess immigrant women's knowledge of and attitudes towards breast cancer and screening practices and also to discover and delineate barriers which inhibit participation in mammographic screening practices. In addition to immigrant Chinese women, this instrument has also been tested and validated among immigrant women from Arabic (Kwok et al., 2016), Korean (Kwok et al., 2017), African (Kwok et al., 2016a) and Indian (Kwok et al., 2016b) backgrounds living in Australia. A modified version of the BCSBQ was tested among Chinese women living in Hong Kong (Fong et al., 2012), where the language and transportation issues which had loomed large in Australian settings, did not apply. Consistent with the original version (Kwok et al., 2010), the modified BCSBQ was found to be valid and reliable. The next challenge, which forms the focus of this paper, was to test and evaluate the cultural adaptability of the modified BCSBQ in a typical community in mainland China.

3. Methods

This cross-sectional study used a self-administered survey conducted from March to July 2016 in Foshan, a city with a population of 735,000, located in the Guangdong Province in the southern region of China. The study was approved by the relevant human research ethics committees.

3.1. Participants

The target population were Chinese women aged over 18 years, able to read and speak either Cantonese or Mandarin and with no history of breast cancer. Women with such a history were not eligible because their diagnosis could have impacted on their beliefs about cancer and screening behaviours.

Based on a rule-of-thumb measure of 20 subjects per item for factor analysis (Streiner and Norman, 2003), a sample of 220 participants was sufficient for a confirmatory factor analysis of the 11-item modified BCSBQ questionnaire. Of the 685 women invited to participate in the study, 506 agreed to do so and returned the questionnaire, giving in a response rate of 73.9%.

3.2. Data collection

The first author, who is an experienced researcher and senior nursing academic, trained a local team of five research assistants in data collection. Two community centres and a number of outpatient clinics in Foshan were approached to help in the recruitment of potential participants. Women who visited these institutions were invited to participate in the study and given an information sheet and the questionnaire. Participation was entirely voluntary and the women were assured that no data which might identify them would be collected. Those who agreed to participate were requested to fill in the questionnaire and place it in a sealed container in the institution or return it by post. The questionnaire took about 20 min to complete and its return was taken as an indication of voluntary consent. The 'snowball' sampling technique was also employed to speed up the recruitment process. The research assistants extended the recruitment coverage to different parts of Guangdong Province during holidays taken in their home towns.

3.3. Instrument

The BCSBQ was originally a 13-item instrument comprising three subscales: 1) Attitudes towards general health check-ups; this contained four items designed to explore whether women were presenting themselves for general health check-ups in the absence of signs and symptoms of illness; 2) Knowledge and perceptions about breast cancer, also containing four items designed to explore cultural beliefs relating to breast cancer and, 3) Barriers to mammographic screening, consisting of five items which explored barriers (three psychosocial, two practical) that discouraged participation in breast cancer screening measures. Considering the fact that transportation and language were not a problem for screening services in China, the practical barrier items were removed, leaving three items in this subscale.

All of the items were rated on a 5-point Likert scale ranging from "strongly agree" (score of 1) to "strongly disagree" (score of 5). Because of the wording of these items, a response of either "disagree" or "strongly disagree" was indicative of a more proactive attitude to health check-ups, fewer fatalistic beliefs about breast cancer and fewer perceived barriers to mammographic screening. The items are presented in Fig. 1. For each subscale, the total score was standardized to a 0–100 range for assessment. A higher subscale score indicated more proactive attitudes, better knowledge or a lower level of barriers.

The demographic information collected included age, years living in either an urban or rural area, marital status, education level and employment status. Information was also collected on participants' awareness of breast cancer screening measures including breast self-examination (BSE), clinical breast examination (CBE) and mammography and how often they practiced or participated in these measures. We also collected information on participants' participation in infra-red and ultrasound screening since these two measures are currently used in China for early detection of breast cancer as an alternative to mammography. To align with the common practice in other countries where mammography is the mainstream screening measure, only data on participation in mammography were included in the assessment of psychometric properties.

3.4. Statistical analysis

The three subscale scores of the modified BCSBQ were computed in the same way as previously reported (Fong et al., 2012). Missing values would be imputed by the half-rule, i.e. if more than half of the items in a subscale were validly answered, any missing response in that subscale was imputed by the mean of the answered items, otherwise the subscale was discarded. Participants' demographics were summarized using descriptive statistics. The mean, median, standard deviation, maximum and minimum of the three subscale scores were computed. Proportions of subjects scoring 0 and 100 in these 3 subscales were computed to assess the floor and ceiling effects, i.e. whether a 5-point Likert scale is sufficient to clearly distinguish the responses at the two extremes.

Item performance of the modified BCSBQ was first assessed. Good internal consistency was reflected by a Cronbach's alpha