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Adapting Champion's Breast Cancer Fear Scale to colorectal cancer: Psychometric testing in a sample of older Chinese adults

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A B S T R A C T

Purpose: Colorectal cancer (CRC) is the most common type of cancer in both men and women, and older adults are more susceptible to this disease. Previous studies suggest that cancer fear may be a key predictor of participation in cancer screening. Yet there is a lack of validated measuring tools of fear relating to CRC for the Chinese older adult population. This study aims to test the psychometric properties of the Chinese version of the Colorectal Cancer Fear Scale (CRCFS), adapting from the Champion's Breast Cancer Fear Scale.

Methods: The CRCFS was developed by altering the wording 'breast cancer' to 'colorectal cancer'. Interviewer-administered surveys were carried out with a convenience sample of 250 community-dwelling adults aged at least 60 years old without a history of cancer. A subsample of 40 participants completed the scale again at one-month.

Results: Confirmatory factor analysis revealed that the one-factor model provided excellent fits to the overall data, and two randomly split samples. Cronbach's alpha of the scale was 0.95 and test-retest reliability was 0.52. Positive and significant correlations of CRC Cancer Fear with CRC-related susceptibility, severity and barriers were observed. A non-linear relationship with benefits was found.

Conclusions: The findings provide support for the psychometric properties of a Chinese version of the Champion Cancer Fear with an adaption to CRC in a sample of community dwelling older Chinese adults. The scale provides a useful tool to assess CRC-related fear, which interventions should address in order to improve screening rates among older Chinese adults.

Introduction

Colorectal cancer is the most common type of cancer in both men and women worldwide. It is the fourth most common cause of deaths, with an estimated 610,000 people dying from it in 2008 (World Health Organization, 2013). In Hong Kong, colorectal cancer is second common cancer, accounting for 16.6% of all cancer new cases in 2010, with the age-standardized incidence rates of 47.0 for male and 30.1 for female per 100,000 respectively (Centre for Health Protection, 2013). It also affects both men and women similarly, accounting for 14.4% of all cancer deaths in 2011 (Centre for Health Protection, 2013). The related medical problems are more challenging in the elderly sector since the rising trend in the number of new cases and of deaths from colorectal cancer over the past two decades is mainly attributed to an increasing population of people aged ≥65 (Cheung and Leung, 2007).

Screening for colorectal cancer is a cost-effective prevention and control strategy, since early detection and treatment of colorectal cancer among asymptomatic patients can result in a significant reduction in mortality (Mandel et al., 1999; Pignone et al., 2002; Walsh and Terdiman, 2003). Although there are no local guidelines for CRC screening (Centre for Health Protection, 2012), international recommendations emphasize that people at average risk should undergo screening from 50 onwards (Sung et al., 2008; U.S. Preventive Services Task Force, 2008). In Hong Kong, colorectal cancer screening is opportunistic, and a local study among elderly who sought for long-term care services reported that the screening rate is only suboptimal (Leung et al., 2012). Approximately 74% of colorectal cancer is identified at the age of 60 or above (Hong Kong Cancer Registry, 2013), thus, initiatives related with early detection of colorectal cancer in this subgroup are imperative to reduce cancer mortality in Hong Kong.

Fear-related barriers have been shown to relate with participation in CRC screening. These barriers include worry, fear of

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having the cancer and fear of the procedure. Currently, the findings of previous studies on the direction of the effect of fear on participation in CRC screening are inconsistent (Power et al., 2009). Three previous studies found that fear may be a facilitator (Costanza et al., 2005; Kelly and Shank, 1992; Sutton et al., 2000) while another four reported fear may be a barrier of participation (Brenes and Paskett, 2000; Bynum et al., 2012; Kremers et al., 2000; Myers et al., 2007). The contradictory results on the fear-screening relationship may be, in part, due to the differential impact of socio-demographic characteristics (Davis et al., 2012; Power et al., 2009). Alternatively, it is also possibly due to the heterogeneity in both conceptual and operational definitions of the construct in these studies. Out of the seven studies, three studies used one single item to assess worry of getting CRC on a 3-point or 4-point Likert scale (Brenes and Paskett, 2000; Costanza et al., 2005; Sutton et al., 2000), one study use nine items to assess nine different aspects of fear, one item for each aspect of fear being measured (Bynum et al., 2012), one study used four items to assess fear of CRC in four different situations (Kremers et al., 2000), while the remaining two did not provide information on how the fear construct was operationalized (Kelly and Shank, 1992; Myers et al., 2007).

Apparently, the present instruments for measuring fear of colorectal cancer may not be adequate when assessing the construct. Fears is defined as 'a negatively toned emotion accompanied by a high level of physiologic arousal stimulated by a threat that is perceived to be significant and personally relevant' (Witte, 1992). Based on this conceptualization of fear of cancer, Champion and Skinner (2004) have developed a comprehensive 8-item instrument, The Breast Cancer Fear Scale, for the measurement of cancer fear specifically for breast cancer. Their study showed the scale had high internal consistency ($\alpha = 0.91$) and stability ($r = 0.70$), and had acceptable construct validity as it was significantly associated with psychosocial predictors of cancer screening, which include perceived susceptibility, severity, benefits and barriers of screening (Champion and Skinner, 2004). A previous study has also adapted this breast cancer specific scale to measure cancer fear in general, by altering the wordings of breast cancer to cancer (Miles et al., 2008).

The aim of the present study was to adapt the Breast Cancer Fear Scale (Champion and Skinner, 2004) to colorectal cancer, translate it into Chinese and analyze its psychometric properties in a sample of older Chinese adults. In particular, internal consistency by Cronbach's alpha, stability by test-retest reliability, factorial validity by confirmatory factor analysis and concurrent construct validity by correlations with theoretically linked variables of the Chinese adaptation of the Breast Cancer Fear Scale to CRC were examined.

Methods

Procedure and participants

A combined translation technique including the back-translation method, committee approach and pretest procedure was used to establish linguistic equivalence of the scale (Cha et al., 2007). The Champion's Breast Cancer Fear Scale with an adaption to colorectal cancer was first translated into Chinese by a master student in psychology who is fluent in English. The resulting draft was then translated back into English by a graduate in linguistics. The back translation of the adapted scale was then assessed by the research team which consists of two professors in nursing (one of them is an expert in oncology nursing) for review. All the discrepancies and inconsistencies were then resolved by discussion. Care was taken to ensure that each translated item retained a meaning as close as possible to the original version. The adapted version of the scale was then piloted with four older adults to collect feedback on their understanding of the items in the scale. The comments of the older adults were examined in another research team meeting, and the final Chinese version of the Colorectal Cancer Fear Scale (CRCFS) was produced and is included Appendix 1.

To assessing the psychometric properties of the adapted CRCFS, a cross-sectional study was carried out. Participants were community-dwelling older adults who (a) aged 60 or above, (b) able to communicate in Cantonese or some other form of Chinese, (c) had no history of cancer, (d) were not currently diagnosed with a mental disease (e.g. schizophrenia or schizo-affective disorder), (e) had no severe cognitive impairment (e.g. dementia or Alzheimer's disease) or history of stroke, and (f) did not suffer from any hearing or visual impairment. We planned to recruit 250 participants because such sample size (>200) was sufficient to achieve for accurate inference in confirmatory factor analysis (Boomsma and Hoogland, 2001) and allow a small percentage of incomplete or problematic questionnaires (Hair, 2010). A subsample of 50 subjects created by systematic sampling was invited to respond to the survey again at one-month. To boost participation, subjects completing the survey received HK$20 cash for their time.

Research assistants (RAs) of the project first introduced and explained the details of the study to members of the three participating centres after their monthly meetings. After obtaining written consent, RAs administered the survey instrument face-to-face at the centre premises, with special care taken to make sure that the space was large enough to ensure confidentiality.

Measures

Colorectal cancer fear

We adapted the 8-item Cancer Fear Scale (Champion and Skinner, 2004) which measure women's emotional responses to breast cancer and mammography behaviour to colorectal cancer and its screening in the current study. In particular, we altered the wording 'breast cancer' to 'colorectal cancer' in all the eight items. Responses were solicited with a 5-point Likert scale ranging from 1 = 'strongly disagree' to 5 = 'strongly agree', where greater value indicates the respondent feels more fear about colorectal cancer. An alternative version of the scale measuring cancer in general has been shown to have a high reliability ($\alpha = 0.91$) in an older adult sample (Miles et al., 2008).

Susceptibility, severity, benefits and barriers to CRC and CRC screening

The 35-item CRC Perceptions Scale (CRCPS) developed by Green and Kelly (2004) using the Health Belief Model was used to measure the four psychological constructs relating to perceptions of CRC and its screening – susceptibility, severity, benefits and barriers. A recent psychometric testing of a Chinese version of the scale on Chinese older adults showed that the scale had six subscales: (1) Susceptibility to CRC measuring the likelihood of their developing CRC in the near future (five items); (2) Severity-fear on severity relating to mental status (six items); (3) Severity-life impact on severity relating to how life would be affected by CRC (six items); (4) Benefits on the view that CRC screening could result in early detection and treatment of the cancer and decrease the chances of dying (five items); (5) Psychological barriers related to the perceived negative health and psychological consequences of screening tests, including health damage, pain, embarrassment and fear (three items); and (6) Knowledge barriers on the perceived access barriers to screening, including lack of financial resources, time and environmental factors (10 items) (Leung et al., in press). Acceptable reliability ($\alpha = 0.74$–0.89) and satisfactory construct validity of the scale was reported in their study. Respondents were