



Original article

Health-related quality of life and utility scores of patients with breast neoplasms in China: A multicenter cross-sectional survey



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ABSTRACT

Background: Health-related quality of life and utility scores of patients with breast cancer and precancerous lesions are sparse in China. This study aimed to derive utility scores of patients with breast cancer and precancer in China.

Material and methods: An interviewer-administered cross-sectional survey was conducted in 12 provinces across China from 2013 to 2014. The three-level EuroQol-5-Dimension instrument was used to evaluate quality of life, and utility scores were generated using the Chinese value set. Univariate and multivariate analyses were performed to explore the determinants of utility scores.

Results: In total, 2626 breast cancer and 471 precancer patients were included. Mean age was 49.1 for breast cancer and 41.4 years for precancer ($p < 0.001$). Among the five dimensions, pain/discomfort was the most reported problem, 53.9% in breast cancer and 29.3% in precancer patients. Mean (95% CI) utility scores for breast cancer and precancer patients were estimated as 0.887 (0.875–0.899) and 0.781 (0.774–0.788), and the scores of breast cancer at stage-I, stage-II, stage-III and stage-IV were 0.789 (0.774–0.805), 0.793 (0.783–0.802), 0.774 (0.759–0.788) and 0.686 (0.654–0.717), respectively. Mean (95% CI) visual analogue scale scores for breast cancer and precancer were 75.6 (74.0–77.3) and 72.8 (72.3–73.3). Multiple regression showed advanced clinical stage, lower educational level, lower household income, surgery treatment, and undergoing treatment were independently associated with lower utility scores for breast cancer patients.

Conclusion: The utility scores deteriorate with the severity of breast neoplasms. Detailed utility scores of breast cancer and precancer are fundamental for further cost-utility analysis in China.

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1. Introduction

Breast cancer (BC) is the most diagnosed cancer in females worldwide. In 2012, 1.7 million new breast cancer cases occurred, accounting for 25.2% of all cancer cases [1]. In China, breast cancer is the leading cancer incidence and ranks the sixth cause of cancer death in females, meanwhile the burden has continued to increase in the past three decades [2]. Owing to substantially better prognosis [3], BC patients tend to live longer, leading to remarkable increase in years lived with disability and economic burden [4,5]. Thus, the health-related quality of life (HRQoL) of BC survivors is of great concern.

HRQoL is adopted as a common indicator along survival endpoints in clinical trials and the health technology assessment [6–8]. HRQoL could be embodied with descriptive dimensions, such as fatigue and pain. The health utility score is an overall indicator that integrates multiple descriptive dimensions, which could be derived through direct evaluation using standard gamble (SG) and time trade-off (TTO) techniques or indirect instruments using multi-attributed health state score systems. The utility score is a key element in measuring the quality-adjusted life years (QALYs) and cost-utility analyses in the health economic evaluation.

The three-level EuroQol-5-dimension questionnaire (EQ-5D-3L) is widely used as a generic instrument to derive the health utility score through the scoring algorithm, called the value set [9–11]. A number of countries have established country-specific value sets [11], and previous studies demonstrated that utility scores varied substantially when different value sets were applied [12,13]. The Chinese population-specific EQ-5D-3L value set was published in 2014 [14], however, limited empirical studies on utility scores were identified for breast cancer patients in mainland China. As reported by a systematic review in 2017 [15], most utility scores were generated using the United Kingdom or Japan value set. Meanwhile, previous studies put excessive focus on the HRQoL of BC patients, but they omitted comparisons with precancer patients [16,17].

The primary purpose of this large-scale multicenter survey was to compare the HRQoL and utility scores of BC patients with precancer patients in China. The second purpose was to investigate the impact of socio-demographic and clinical characteristics on

utility scores.

2. Material and methods

2.1. Study design

The Cancer Screening Program in Urban China (CanSPUC), a key national project supported by the Chinese government, was initiated in 2012 [18]. The project was designed to provide free screening services for six common cancers (breast cancer included) for community residents in urban China. This multicenter study was conducted at the designated hospitals of CanSPUC from September 2013 through December 2014 [19]. The study protocol was approved by the Institutional Review Board of the Cancer Hospital of Chinese Academy of Medical Sciences (Approval No. 15-071/998).

2.2. Study participants

Recruitment was conducted at 12 study sites of CanSPUC covering four geographic regions of China and aimed to fulfil convenience samples of 200 BC and 60 precancer patients per site. Inclusion criteria were 1) clinically diagnosed patients with precancer or BC, 2) aged 18 + years old, 3) without any mental disorder and being able to understand the survey procedure, and 4) without any serious vision or hearing problems. Precancerous lesions were broadly defined, including intra-ductal proliferative lesions, lobular neoplasia, benign epithelial hyperplasia, fibro-epithelial tumor and intra-ductal papillary neoplasm. A written informed consent was obtained from each participant ahead of the interview.

2.3. Instruments

2.3.1. Socio-demographic and clinical characteristics

A questionnaire was designed to collect social-demographic information, including age, educational level, occupation, marital status, household income in 2012 and health-care insurance. Clinical characteristics were retrieved from medical records by matching an external database of CanSPUC with a unique ID,

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