



Psychometric properties of the Menopause Specific Quality of Life questionnaire among Thai women with a history of breast cancer

Warunee Phligbua^{a,*}, Ellen M. Lovie Smith^b, Debra L. Barton^c

^a Department of Medical Nursing, Faculty of Nursing, Mahidol University, 2 Wanglang Road, Bangkoknoi, Bangkok, 10700, Thailand

^b Department of Behavior and Biologic Sciences, University of Michigan School of Nursing, University of Michigan, 48109-5482, USA

^c Department of Systems, Populations and Leadership, University of Michigan School of Nursing, University of Michigan, Michigan, 48109-5482, USA

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ABSTRACT

Purpose: This study evaluated the psychometric properties of the Thai Menopause Specific Quality of Life Questionnaire (MENQOL) instrument in menopausal Thai women with a history of breast cancer.

Methods: Two hundred and ninety women with a history of breast cancer who reported hot flashes completed the Thai MENQOL. Internal consistency reliability and item analysis were used to evaluate the reliability of the Thai MENQOL. Construct validity was evaluated by examining the correlations between the self-reported hot flash frequency and severity with the vasomotor MENQOL subscale (convergent validity); and assessed using exploratory factor analysis (structural validity).

Results: The Cronbach's alpha coefficient for the MENQOL total scale was 0.86 and for the vasomotor, psychosocial, physical, sexual domains were 0.73, 0.78, 0.81, and 0.83, respectively. Self-reported frequency and severity of hot flashes were correlated significantly with the vasomotor subscale (r 's ≥ 0.50 , p 's < 0.001). The single item "increased facial hair" was poorly correlated with most items ($r = 0.13$). Confirmatory factor analysis supported four factors explaining 42.35% of the total variance. Item-domain correlation analysis showed that all items correlated more strongly with their own domains than with other domains.

Conclusions: The Thai version of the MENQOL demonstrates good psychometric properties (internal consistency reliability, convergent validity, and structural validity). We recommend removal of the single item, "increased facial hair" from the Thai version due to low correlations with most items. The Thai MENQOL can be used to measure menopause-related quality of life in Thai women with a history of breast cancer experiencing menopausal symptoms.

1. Introduction

Breast cancer is the most frequent cancer among women with an estimated 1.67 million new cancer cases diagnosed in 2012 (International Agency for Research on Cancer World Health Organization, 2017a). In Thailand, the GLOBOCAN project of the International Agency for Research on Cancer (IARC) estimated new breast cancer cases to be about 15,469 in 2020 (International Agency for Research on Cancer World Health Organization, 2017b). For women, breast cancer is one of the top five survivable cancers in Thailand, with 5-year survival ranging from 62% to 65%, depending on stage (International Agency for Research on Cancer World Health Organization, 2011).

With growing numbers of breast cancer survivors, menopausal symptoms can be a long term consequence of treatment, since for many,

the goal of treatment is estrogen depletion. Breast cancer treatment with chemotherapy can result in acceleration of menopause due to premature follicular senescence which results in hot flashes (Couzi et al., 1995; Davis et al., 2014; Gupta, 2006; Hunter et al., 2004). Among menopausal symptoms, hot flashes are considered to be the most troublesome, with prevalence rates between 63% and 80% in breast cancer patients (Barba et al., 2014; Barton and Ganz, 2015). Other important symptoms of menopause and particularly of estrogen depletion can include vaginal dryness, urinary changes, trouble sleeping, and reduced sexual desire and arousal (Barton and Ganz, 2015; Loibl et al., 2011). In order to study potentially effective treatments for menopausal symptoms in breast cancer survivors in Thailand, a reliable and valid tool is needed.

A popular and well-validated instrument used in the US for the measurement of menopausal symptoms is the Menopause Specific

* Corresponding author.

E-mail addresses: warunee.phl@mahidol.ac.th (W. Phligbua), ellenls@umich.edu (E.M.L. Smith), debbartn@umich.edu (D.L. Barton).

Quality of Life Questionnaire (MENQOL) (Davis et al., 2014; Kulasingam et al., 2008; Radtke et al., 2011; Sydora et al., 2016). The MENQOL, developed by Hilditch et al. (1996), is a self-administered questionnaire to measure the impact of menopausal symptoms on health related quality of life in menopausal women. This scale consists of 29 items that ask women to rate the degree of bother for each of 29 menopause-related symptoms. The MENQOL has found wide acceptance in menopause research (Kulasingam et al., 2008; Sydora et al., 2016; Van Dole et al., 2012; Williams et al., 2009). Recently, the psychometric properties of the MENQOL have been evaluated in breast cancer survivors experiencing menopausal symptoms in the US and Europe (Doyle et al., 2011; Radtke et al., 2011). Radtke et al. (2011) evaluated the psychometric properties of the MENQOL in postmenopausal breast cancer survivors. Adequate validity and reliability was demonstrated with the Cronbach alpha's for each subscale being greater than 0.70. The only evidence of discriminant validity for both the vasomotor and psychosocial subscales of the MENQOL consisted of low, non-significant correlations with the psychosocial (i.e., nervous irritability, and depressive moods) and vasomotor (i.e., hot flash, and profuse perspiration) items of the Kupperman index and symptom diary (both $r \leq 0.176$, $p > 0.05$). In addition, convergent validity for both the vasomotor and psychosocial subscales of the MENQOL was established by moderate to high correlations with the vasomotor and psychosocial items of the Kupperman index ($r \geq 0.614$, $r \geq 0.724$, $p < 0.001$). As for structural validity, almost all items in the vasomotor, psychosocial, and sexual subscales loaded strongly in their domains, except for physical subscale items which loaded on multiple domains. This may be due to small sample size ($N = 108$) for a factor analysis approach (Radtke et al., 2011).

The first translation of the MENQOL was performed by a group of Master's degree students who modified the questions (Imsudjai, 1997; Ngaongarm, 1997; Rattanakit, 1997; Saneebuttra, 1997; Sindhunava, 1997). However, a major limitation was that the instrument had not been back-translated into English. The translated, modified measure was then used in several studies to evaluate the impact of menopausal symptoms on quality of life of menopausal women in different regions of Thailand. The final modified MENQOL Thai version included 27 items. The sexual domain was excluded because intimate questions about sexual activities during the menopausal period were believed to be culturally inappropriate and sensitive by the investigators. Evidence of adequate internal consistency reliability was supported by Cronbach's alpha coefficients for each domain ranging from 0.75 to 0.93 (Somsak, 2002).

A second translation of MENQOL was translated into Thai by Pongpatiroj et al. (2001) to assess health related quality of life in 36 postmenopausal women who received hormone therapy replacement. Standard translation techniques were not described. Only content validity and internal consistency reliability data were reported. In that study, the MENQOL Thai version was tested for content validity by three experts in gynecology and midwifery. Internal consistency reliability was assessed for each subscale in a pilot study of 12 postmenopausal women who were 47–62 years old, had ceased menstruation for 2–7 years, had not had a hysterectomy, and who had not used hormone therapy during the preceding 6 months. The alpha reliability coefficient was 0.894 for all subscales. This level of psychometric testing was inadequate to fully validate this scale. Despite this, the Thai version has been used to measure menopausal symptoms in Thai women experiencing naturally occurring menopause (Kutheerawong and Vichinsartvichai, 2016; Peeyananjarassri et al., 2006) and in women with HIV infection (Boonyanurak et al., 2012).

In summary, research evidence from two small studies of menopausal women suggests that the Thai MENQOL has good internal consistency reliability. However, standardized translation procedures were either not described or not followed, and the MENQOL has never been validated in women with a history of breast cancer. Cultural and environmental issues have been hypothesized to affect the psychometric

properties of MENQOL (Sydora et al., 2016). Hence, the purpose of this study was to evaluate the following four properties: (1) internal consistency reliability, (2) content validity and item analysis, (3) convergent validity, and (4) structural validity of the Thai MENQOL in women with a history of breast cancer who report hot flashes.

2. Methods

2.1. Design

This study was a cross-sectional psychometric analysis. We recruited the participants from a university hospital located in Bangkok, Thailand using a convenience sampling method between May 2016 and September 2016.

2.2. Participants

Participants ($N = 290$) were recruited through the outpatient cancer clinics from a university hospital located in Bangkok. Women with a history of breast cancer were eligible if they were postmenopausal, defined by either no menstrual period in the past 12 months, surgical menopause through bilateral oophorectomy, no menstrual period in the past 6 months since finishing chemotherapy, or women with hysterectomies and at least one functioning ovary under the age of 50 with biologic (blood test FSH and estradiol) verification of their menopausal status in their medical charts. Women had to be experiencing hot flashes. Participants could not have a diagnosis of major depressive episode or other documented psychiatric illness, acutely deteriorating physical function, or illness that would preclude an individual from being interviewed or filling out questionnaires.

2.3. Ethical considerations and consent process

The participants were informed about the purpose of the study and what would be expected of them. Participants were assured of their right to withdraw from the study at any stage without any negative consequences. Steps to protect confidentiality were observed. All participants signed an informed consent. This study was approved by the Institutional Review Board 157/2559 (EC4) and COA No. Si 269/2016 of the hospital where data collection took place.

2.4. Procedures

According to a rule of thumb for psychometric analyses, the ratio of the number of subjects to the number of items ranges from 3 to 10, with at least 3 subjects per items being minimally required (Hair et al., 1998; Knapp and Brown, 1995; Rouquette and Falissard, 2011). Thus, 290 participants were included in this study, providing a ratio of 10 women per item. Therefore our sample size was large enough to examine properly the psychometric properties of the MENQOL with the factor analysis approach. First for reliability, we examined whether the subscale of the Thai MENQOL measured the same construct. In doing so, we considered internal consistency reliability for all subscales as a result of calculating Cronbach's alpha coefficients. Second for validity, we examined content, convergent, and structural validity.

2.5. Data collection

All data were collected one time only. The following questionnaires were completed by the participants at one setting. Demographic and medical information forms were developed by the researchers as a structured self-report data collection tool. These forms were used to quantify breast cancer stage of disease, type of adjuvant therapy, use of tamoxifen or aromatase inhibitors, and perceptions of frequency and severity of hot flashes.

The Menopause Specific Quality of Life Questionnaire (MENQOL)

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