Effects of the Body Mass Index on Menopausal Symptoms Among Asian American Midlife Women Using Two Different Classification Systems

Sun Ju Chang, Wonshik Chee, and Eun-Ok Im

ABSTRACT

Objective: To explore the effects of the body mass index (BMI) on menopausal symptoms among Asian American midlife women using two different classification systems: the international classification and the BMI classification for public health action among Asian populations.

Design: Secondary analysis using data from two large Internet survey studies.

Setting: Communities and groups of midlife women on the Internet.

Participants: A total of 223 Asian American midlife women who were recruited over the Internet.

Methods: The Midlife Women's Symptom Index and self-reports of height and weight were used to collect data. The data were analyzed using multiple analyses of covariance.

Results: No significant differences in the prevalence and severity scores among three subscales and total menopausal symptoms according to the international classification were found. When the BMI classification for public health action among Asian populations was used as an independent variable, significant differences were found in the severity scores of three subscales and total menopausal symptoms. Results of the post-hoc analyses showed that Asian American midlife women who were in the BMI classification for high risk had significantly more severe menopausal symptoms than those who were in the BMI classification for increased risk.

Conclusion: For Asian American women, BMI categorized using the BMI classification for Asian populations is more closely related to the severity of menopausal symptoms than BMI categorized using the international classification. Nurses need to consider the BMI classification for Asian populations when they develop interventions to prevent and alleviate menopausal symptoms among Asian American midlife women.

Correspondence
Sun Ju Chang, PhD,
School of Nursing
University of Pennsylvania
418 Curie Blvd,
Philadelphia, PA 19104.
changsunju@gmail.com

Sun Ju Chang, PhD, is a postdoctoral researcher in the School of Nursing, University of Pennsylvania, Philadelphia, PA.

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Menopause constitutes the permanent cessation of a woman's menstrual periods due to the discontinuance of hormone production in the ovaries (U.S. Department of Health and Human Services, Office of Women's Health, 2010). According to the National Institute of Aging (2008), the mean age of menopause is 51, although it varies depending on a woman's lifestyle (e.g., smoking habits) and medical history (e.g., hysterectomy). However, with changes in the levels of hormones, including estrogen and progesterone, a woman in her forties might undergo menopausal transition or perimenopause (American Society for Reproductive Medicine, 2012; National Institute of Aging, 2008). The period after menopause is known as postmenopause (American Society for Reproductive Medicine, 2012; National Institute of Aging, 2008). Throughout the menopause process, midlife women between age 40 and 60 might experience various menopausal symptoms, including physical symptoms (e.g., hot flashes, night sweats, vaginal dryness, stiffness and soreness in the joints and muscles), psychological symptoms (e.g., forgetfulness, difficulty falling or staying asleep, depressed mood), and psychosomatic symptoms (e.g., dizziness, fatigue, headache) (Im, 2006). Because these symptoms can affect a woman's quality of life, health, and well-being (Daley et al., 2007; Waidyasekera, Wijewardena, Lindmark, & Naessen, 2009), health

care providers and researchers have devoted considerable attention to identifying risk factors for the development and aggravation of menopausal symptoms.

With regard to risk factors for the development and aggravation of menopausal symptoms, previous researchers have reported several factors, including menopausal stage, age, education, body mass index (BMI), smoking, diet, physical activity, and alcohol use (Gold et al., 2006; Perez, Garcia, Palacios, & Perez, 2009). Among these factors, the BMI, which is related not only to menopause age and menopausal symptoms but also to metabolic syndrome and cardiovascular disease after menopause, is considered an important factor in many menopausal symptoms-related studies because the BMI has the potential to be modified through interventions (Carr, 2003; Fernandez-Alonso et al., 2010; Morris et al., 2012).

In the current literature, researchers have reported a positive association between BMI and menopausal symptoms among multiethnic groups of midlife women, including White, African American, and Hispanic (Fernandez-Alonso et al., 2010; Im, Lee, Chee, Brown, & Dormire, 2010; Lu, Liu, & Eden, 2007). However, the association between BMI and menopausal symptoms among Asian American midlife women who experience menopausal symptoms has not been demonstrated in the current literature (Gold et al., 2006; Im et al., 2010). A plausible reason might be the differences in body composition between Asian populations and Western populations. Many Asian populations, even Asian Americans, have a higher percentage of body fat than Western populations who are at the same BMI (Lauderdale & Rathouz, 2000; World Health Organization [WHO], 2004). For this reason, an alternative BMI classification for public health action among Asian populations that reflects Asian-specific body composition has been introduced in health sciences (WHO, 2004). However, virtually none of the studies on Asian American midlife women has been conducted using the alternative BMI classification for public health action among Asian populations. Also virtually no researchers have explored whether the alternative BMI classification for public health action among Asian populations would be more appropriate for Asian American midlife women than the current BMI classification.

To design and develop adequate interventions for preventing and alleviating Asian American midlife women's menopausal symptoms, the effects of the

The Body Mass Index Classification introduced by the World Health Organization for public health action among Asian populations reflects Asian-specific body composition.

BMI on menopausal symptoms need to be investigated while considering Asian-specific body composition. Hence, the purpose of the secondary analysis was to explore the effects of the BMI on menopausal symptoms among Asian American midlife women by using two different classification systems. For this purpose, we began with a review of two BMI classification systems, the international classification (current classification) and the BMI classification for public health action among Asian populations. Then we reviewed the associations between BMI and menopausal symptoms in light of the existing hypotheses, including the thin hypothesis and the thermoregulatory model. Finally, the effects of the BMI on the prevalence and severity of menopausal symptoms among Asian American midlife women were examined under the two different classification systems using the findings from a secondary analysis.

Background

Body Mass Index and Classification Systems

Body mass index is calculated as a person's weight (in kilograms) divided by his or her height squared (in meters) (kg/m^2). By comparing a person's weight to height, BMI can be used to indirectly measure a person's body fat (Vasudevan, Stotts, Anabor, & Mandayam, 2012; WHO, 2004). Body mass index is not a diagnostic measurement. However, because BMI can easily be used to assess overweight and obesity among the general population and has been reported to be a reliable indicator of obesity-related diseases such as type 2 diabetes and coronary heart disease, it is widely used in the health care field worldwide (Centers for Disease Control and Prevention [CDC], 2011; Chiu, Austin, Manuel, Shah, & Tu, 2011; Vasudevan et al.; WHO, 2004).

For interpretation of BMI, BMI cutoff points with international classification of weight status for adults were introduced by the WHO) (1995, 2000) (see Table 1). These BMI cutoff points and the international classification have been widely accepted for international use as screening measurements to identify individuals at high risk for obesity-related diseases (CDC, 2011; WHO, 2004). However, because these BMI cutoff points were based on

Wonshik Chee, PhD, is an associate professor in the School of Nursing, University of Pennsylvania, Philadelphia, PA

Eun-Ok Im, PhD, MPH, RN, CNS, FAAN, is the Marjorie O. Rendell Endowed Professor in the School of Nursing, University of Pennsylvania, Philadelphia, PA