



## Original article

## Gender differences in climacteric symptoms and associated factors in Korean men and women



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## ABSTRACT

Both men and women may experience multifaceted symptoms that are part of natural aging throughout the climacteric period. This study compared the prevalence and severity of climacteric symptoms between genders and identified the underlying clusters of climacteric symptoms and associated factors in midlife men and women. A cross-sectional study was done with 254 middle-aged Korean men ( $n = 129$ ,  $M = 50.4$ ) and women ( $n = 125$ ,  $M = 49.5$ ). Data were collected by self-administered surveys and analyzed using t-tests, chi-square tests, exploratory factor analysis, and regression analysis. Significant gender differences in overall climacteric symptoms were not detected except for muscle weakness, weight gain, and hot flashes. Climacteric symptoms were clustered as physical, vasomotor-genital, psychological, and metabolic dimensions, with the physical dimension being the most explanatory cluster. A significant gender effect was found only in the metabolic dimension after adjusting for the relevant covariates, and regular eating was significantly associated with all symptom clusters. This study offers evidence that most climacteric symptoms are shared by both men and women and emphasizes the importance of healthier lifestyles in the climacteric transition period. The findings highlight the critical need for integrated assessments of the multifactorial symptoms and of modifying poor lifestyles in both genders throughout the climacteric transition period.

## 1. Introduction

Midlife adults experience multifaceted symptoms accompanied by a natural transition to older age, referred to as the climacteric period (Edwards & Li, 2013). This period is a critical point in that symptoms related to biological and psychological changes may affect health-related quality of life. Wilson and Cleary's (1995) health-related quality of life model integrated biological and psychological aspects of health outcomes. They proposed core factors affecting overall quality of life such as bio-physiological factors, symptom status, functioning, and general health perceptions (Wilson & Cleary, 1995). A number of empirical studies have explored a sophisticated mechanism between these core factors not only in the general population but also in people with specific health issues (Ojelabi, Graham, Haighton, & Ling, 2017) including women with climacteric symptoms (Shin & Park, 2016). These authors have noted that symptom status is intertwined with biological factors and functional health which consequently lead to overall quality of life (Ojelabi et al., 2017; Shin & Park, 2016). A considerable amount of literature has supported the intimate relationship between climacteric symptoms and quality of life (Shin & Park, 2016) and there are distinguishing physiological changes between men and women during climacteric transition (Saad & Gooren, 2014). However, it is still

unclear whether the symptom experience of each gender is different and how the factors related to functional and perceptual health are associated with their symptom experience through climacteric transition.

The climacteric changes in women, usually occurring between ages 40 and 60, refer to the transitional period from a reproductive to a non-reproductive state (Chedraui, Aguirre, Hidalgo, & Fayad, 2007). All women face a sexual hormone decline that usually drops rapidly around age 40 and their reproductive capacity is finally terminated (Saad & Gooren, 2014). Comparatively, a precipitous hormonal drop is unusual in men and their reproductive capacity is normally maintained until old age (Saad & Gooren, 2014). With regard to this differential aspect of hormonal decline, males' symptoms, accompanied by a slow and consistent hormonal decline, are typically not very distressful, whereas, by comparison, females' symptoms, accompanied by acute hormonal declines, are relatively noticeable and distressful (Saad & Gooren, 2014).

Several gender-specific climacteric symptoms have been well identified in a number of empirical studies. Hot flashes, excessive sweating, and depressive mood are representative climacteric symptoms in women (Heinemann & Saad, 2003; Mulhall, Andel, & Anstey, 2018; Natari, Clavarino, McGuire, Dingle, & Hollingworth, 2018). Comparably, sexual dysfunction and muscle weakness have frequently been

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noted as representative symptoms in men (Rabijewski, Papierska, Kuczerowski, & Piątkiewicz, 2015; Vingren et al., 2010). Some investigators, however, have indicated that feeling discomfort during sexual activities or hot flashes are not uncommon in both genders through the climacteric transition period (Gozuyesil, Gokyildiz Surucu, & Alan, 2017; Rabijewski et al., 2015). In particular, a study that compared diverse sweating episodes between men and women demonstrated that the patterns of experiencing sweating were not noticeably different between genders, although sweating has been highlighted as a symbolic symptom in females' climacteric experience (Heinemann & Saad, 2003). Moreover, although psychological distress tends to be more of a concern for women than men, empirical studies have found that men also complained frequently about psychological distress such as depressive mood and anxiety in the climacteric transition (Melby, 2006; Rabijewski et al., 2015).

These findings imply that climacteric symptoms overlap between the genders. However, information corresponding to the climacteric symptoms of men is quite rare compared to that of women with a ratio of one to 100 studies (Harrison, 2011). This lack of gender-specific information limits our understanding of the types of climacteric symptoms that are similar or distinct between men and women. A comparative study focusing on symptoms experienced by gender is required to recognize the characteristics of climacteric symptoms for each gender to provide a scientific rationale for managing climacteric symptoms by gender.

Identifying specific dimensions underlying multifactorial symptoms in terms of symptom clusters is essential to capture the etiological factors and to elucidate the reciprocal relationships among symptoms (Sievert & Obermeyer, 2012). Previous studies have identified the physical, psychological, cognitive, vasomotor, and sexual dimensions representing the climacteric symptom clusters (Choi & Shin, 2015; Im, Ko, & Chee, 2014; Melby, Sievert, Anderson, & Obermeyer, 2011). To date, however, most of the findings have reported symptoms limited to a single gender and little is known about the clusters derived from symptoms in both men and women. Furthermore, several researchers have found that the climacteric symptom experiences somewhat varied depending on the socio-cultural contexts, particularly between western and Asian countries, reporting that Asian people tended to complain less severe symptoms compared to the population in western countries (Anderson, Sievert, Melby, & Obermeyer, 2011; Melby, 2006). In addition, it is unclear whether the symptom patterns of how they are clustered are consistent across diverse ethnic and cultural groups.

Several empirical studies have found that there is individual variability in climacteric symptoms without distinction by gender (Edwards & Li, 2013; Heinemann & Saad, 2003). For example, although a high proportion of women generally suffer from distressful or even disabling symptoms through the climacteric transition, some women experience few or no identifiable climacteric-related symptoms (Edwards & Li, 2013). Additionally, how long women experience climacteric changes varies widely, ranging from a few preceding periods of menstrual cessation to ten years after complete cessation (Edwards & Li, 2013). For men, although a strong positive relationship between sexual hormonal deficits and the troubles of climacteric symptoms (e.g., sexual dysfunction, muscle weakness, sleep problems) have been well documented (Rabijewski et al., 2015), several studies have shown that some men are asymptomatic despite sexual hormone deficits (Amore et al., 2012; Morales, 2004). These findings imply that climacteric symptoms in men and women may not be solely affected by hormonal declines.

A number of studies have reported that climacteric symptoms are associated with sociodemographic characteristics including health status such as being overweight and having a chronic illness, and lifestyle behaviors such as smoking and alcohol intake (Lim et al., 2016; Morris et al., 2012; Yim et al., 2015). However, it is still unclear whether a specific dimension of the symptom clusters is associated with particular aspects of lifestyles and health conditions as well as a specific

gender. Furthermore, far too little is known about the Korean population, particularly targeting symptoms that occur in both men and women.

It is urgent to clarify the factors associated with the climacteric symptoms because midlife can be a critical period affecting the quality of later life depending on how individuals incorporate lifestyle habits for healthy aging (Yim et al., 2015). Many climacteric symptoms overlap with the signs of numerous health problems; thus, efforts to cope with and manage symptoms are necessary even if the causes of the symptoms are ambiguous. Understanding the structure of climacteric symptoms and the associated factors is crucial to suggest beneficial guidelines that are needed to manage the symptoms.

Therefore, the purposes of this study were to (a) compare the prevalence and severity of climacteric symptoms between genders, (b) identify the clusters of climacteric symptoms, and (c) investigate their associations with gender, health conditions and lifestyle behaviors in a community-based population of middle-aged Korean men and women.

## 2. Methods

### 2.1. Design

This study is a cross-sectional descriptive study.

### 2.2. Samples and procedures

The participants of this study consisted of 254 middle-aged people including 129 men and 125 women. Data were collected using self-administered surveys. Participants were recruited through a convenience sampling approach in multiple sites (e.g., gyms, industrial companies' lounge areas, and musical shows or drama venues) of three cities (Daegu, Ulsan, and Gyeongju) in South Korea. The criteria to be eligible as a participant included: 1) aged 40–64, 2) no history of sexual or other hormone therapy, 3) no history of hospitalization for any medical treatments for at least one year, 4) no critical or emergent illness history such as stroke, heart attack, or accident within the past one year, and 5) no history of a psychiatric disorder. Three trained research assistants explained the purposes and procedures of the study to potential participants who were screened based on the participation criteria. For eligible participants, the research assistants explained the rights as a participant of the study including the potential benefits and risks. All individuals who voluntarily agreed to participate filled out the written consent forms and self-administered questionnaire packets.

All procedures for this study were approved by the Institutional Review Board of the institution where the principal investigator was affiliated.

### 2.3. Measures

#### 2.3.1. Demographic, health-related, and lifestyle characteristics

Participants responded to the questionnaire asking about socio-demographics including age, gender, income, marital status, and monthly family income.

As for health-related characteristics, participants were asked about their subjective view of their overall health status on a five-point Likert scale ranging from 1 (very poor) to 5 (very excellent), body weight and height to calculate their body mass index (BMI), and if they had been medically diagnosed with any of twelve chronic illnesses. The number of chronic illnesses was summed and recorded if they had been diagnosed with one of three chronic illnesses (i.e., hypertension, diabetes, and hyperlipidemia), which are the most prevalent illnesses among the Korean middle-aged population (Lim et al., 2016).

Participants also responded to information about their lifestyle behaviors. Regular eating habits, alcohol intake, and smoking were assessed as a categorical variable, and engagement in physical activity was assessed with eight items on a four-point Likert scale (1 = never,

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