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Sub-Ethnic Differences in the Menopausal Symptom Experience: Asian American Midlife Women

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Abstract

Purpose—To compare the menopausal symptom experiences of sub-ethnic groups of Asian American midlife women.

Design—A cross-sectional study among 91 Asian American women online. Questions about background characteristics, ethnic identity, and health and menopausal status, and the Midlife Women's Symptom Index were used. The data were analyzed using descriptive and inferential statistics.

Findings—The most frequently reported and the most severe symptoms differed by sub-ethnicity. The total number of symptoms differed by sub-ethnicity, as did total severity scores for the symptoms.

Discussion, Conclusion, and Implications for Practice—Researchers and clinicians should be aware of sub-ethnic differences.

Keywords

Asian; Menopausal Symptom; Experience; Culture

Asian women generally reported low rates of a variety of physical and psychological symptoms related to menopause; these rates were much lower than in women from Western countries (Lock, 2002). Consequently, researchers and others have interpreted this to mean that Asian women were less likely to experience menopausal symptoms (Sheehy, 1992; Brody, 1997; Berger, 1999), but this may not be correct. The low rate of menopausal symptoms in Asian women may be because in Asian cultures, social status often increases with age, and positive attitudes about menopause and aging are frequently observed (Chompootweep, Tankeyoon, Yamarat, Poomsuwan, & Dusitsin, 1993; Elliott, Berman, & Kim, 2002; Im, Meleis, & Park, 1999a; Lock, Kaufert, & Gilbert, 1988; McCarthy, 1994; Ramoso-Jalbuena, 1994; Samil & Wishnuwardhani, 1994; Weng et al., 2001).

Recent studies showed that the patterns of menopausal symptoms experienced by Asian women differed from their Western counterparts (Haines, Xing, Park, Holinka, & Ausmanas, 2005). For example, post-menopausal women from Asian countries reported backaches, muscle pain, shoulder pain, or joint pain, but suffered less frequently from vasomotor disturbances than Western women (Chim et al., 2002; Ho, Chan, Yip, Chan, & Sham, 2003; Haines et al.,

2005; Lam, Leung, Haines, & Chung, 2003). However, most of these reports were preliminary and the reasons for these differences are not yet known.

Furthermore, as discussed by Shea (2006a; 2006b), these findings cannot be generalized to all Asian midlife women because of the diversity within Asian populations and because they are inconsistent. For example, most studies of Japanese women showed that they were less likely to experience hot flashes (Boulet, Oddens, Lehert, Vemeer, & Visser, 1994; Lock, 2002; Oddens, 1994). However, in a recent study, except for hot flashes and headache, the rate at which Chinese women reported menopausal symptoms was higher than that of Japanese women and more similar to women from North America (Shea, 2006a, 2006b). Haines et al. (2005) also reported that the prevalence of individual menopausal symptoms differed among 11 sub-ethnic groups of Asian women. Falk et al. (2002) reported significant differences in the levels of estrogen and sex hormone-binding globulin between Asian- and Western-born Asian American women. Brown et al. (2002) found no significant differences in the frequency of hot flashes between Japanese-American and White women in Hawaii. These inconsistent findings may be because very few studies have compared Asian American women's menopausal symptom experience by sub-ethnicity.

The purpose of this study was to compare the menopausal symptom experiences of five sub-ethnic groups of Asian American midlife women (Chinese, Korean, Asian Indian, Filipinos, and others) in the U.S. In this paper, we defined sub-ethnicity as the sense of identity associated with a sub-group within an ethnic group defined by regional, tribal, or dialectic backgrounds (Nagata, 2005; Phan & Luk, 2008; Salaff, 2005). Asian American midlife women from each of these sub-ethnic groups were recruited via an Internet survey. The questions asked in this study were:

1. What menopausal symptoms are most frequently reported by each of the five sub-ethnic groups of Asian American midlife women?
2. What are the most severe menopausal symptoms reported by each of the five sub-ethnic groups of Asian American midlife women?
3. What are the differences in the types, numbers, and severity scores of menopausal symptoms among the five sub-ethnic groups of Asian American midlife women?

This study is based on the feminist assumption that the inadequate management of menopausal symptoms reported by Asian American women stems not only from biology, but also from these women's continuous historical interactions with their environment, as well as from biases that reflect the ways that they and their health care providers view the world. For example, when an Asian American woman reports a menopausal symptom, she may minimize its effects on her life or its severity because her culture normalizes menopausal symptoms and assumes that they are part of the normal aging process. Therefore, a health care provider trained in Western medicine may think that the woman does not require management strategies for her symptoms. In this case, the inadequate management of menopausal symptoms would not be due to biological differences between Asian American women and those of other ethnicities. Rather, mismanagement may happen because Asian American women's cultural attitudes about menopause and menopausal symptoms were not adequately considered. This study is also based on the feminist assumption that the menopausal symptom experience is influenced by sub-ethnicity, and thus significantly interacts with gender, race, and class to structure relationships among individuals (Ruzek, Clarke, & Olesen, 1997). In this study, we viewed sub-ethnicity within Asian American groups as one of the significant characteristics that circumscribe women's menopausal symptom experience.

Methods

This was a cross-sectional Internet survey study, which was part of a larger study comparing menopausal symptoms in midlife women from four major ethnic groups in the U.S. (Non-Hispanic Whites, Hispanics, Non-Hispanic African Americans, and Non-Hispanic Asians). In this paper, we only present the findings from the quantitative data collected for Asian American midlife women. The institutional review board at the institution where the authors are affiliated approved this study.

Settings and Samples

The settings of this study included Internet communities for midlife women (ICMWs) and Internet communities for Asian American (ICAAs) women in the U.S. ICMWs have been used as a resource for researchers who are investigating middle-aged women who reside in different geographic areas (Baehring, Schulze, Bornstein, & Scherbaum, 1997; Bowker & Liu, 2001; Barrera, Glasgow, McKay, Boles, & Feil, 2002). ICAAs were also targeted for posting of the study announcement because studies reported that ethnic minorities were more successfully recruited in churches and support/social groups that have ethnic and culturally specific memberships (Gavalier, Bonham-Leyba, Castro, & Harman, 1999; Gilliss et al., 2001; Stoy, Curtis, Dameworth, et al., 1995). Thus, recruitment in ICMWs and ICAAs allowed the authors to reach Asian American women in different regions of the U.S.

Using a quota sampling method, 91 self-identified Asian American midlife women aged 40 to 60 years who could read and write English were recruited from ICMWs and ICAAs. Quota sampling uses a convenience sampling technique with an added strategy that ensures the inclusion of subject types that are likely underrepresented in the convenience sample, such as women, minorities, the aged, the poor, the rich, and the undereducated (Burns & Grove, 1997). Burns and Grove (1997) suggested a quota sampling method to decrease the potential response and selection biases for studies using convenience sampling. Thus, we used quota sampling to recruit an adequate number of Asian American women of diverse socioeconomic and menopausal status for this study. Because this study on the differences in menopausal symptoms among Asian American midlife women was a secondary exploration, the sample size was pre-determined by the number of Asian American participants in the larger study.

Sociodemographic characteristics of the participants are summarized in Table 1. The mean age of the sample was 49.4 years ($SD = 5.9$, range = 40 to 60). Of the 91 participants, 34% were Chinese, 18% were Korean, 18% were Asian Indian, 12% were Filipino, and 19% were other Asians. Of the participants, 87% were married; 3.3% were partnered; 5.5% were divorced or widowed; and 4.4% were single. Sixty-eight percent of the participants had one or two children. Almost 85% had a college education or higher and 56% were employed. Approximately half of the women (52%) said that it was not hard to pay for basic needs with their family income. The overall mean BMI was 24 kg/m² ($SD = 4.4$); about 93% of the participants had never smoked; 75% reported themselves as healthy; and about half of the women (48%) said that their favorite foods were vegetables. Forty-two percent of the participants were perimenopausal and 34% were naturally post-menopausal.

Instruments

The instruments used in this study included: (a) questions about background characteristics; (b) questions about ethnic identity; (c) questions about health and menopausal status; and (d) the Midlife Women's Symptom Index. There were 16 questions on background characteristics, including questions about age, education, religion, marital status, employment, degree of difficulty in paying for basic needs, body weight, height, smoking history, availability of perceived social support, number of close friends/relatives, number of children, level of

physical activity, diet, and access to health care. Body mass index (BMI) was calculated in kg/m² using a participant's self-reported height and weight at the time they completed the Internet survey.

Questions about ethnic identity (i.e., ethnic group membership) included a question about ethnic identity required by the NIH's guidelines, using an open space where participants may self-identify their specific sub-ethnicity. In addition, the questions on ethnic identity included one item about country of birth. When the country of birth was not the U.S., the degree of acculturation was measured using six questions about the participant's length of stay in the U.S. and preferences for foods, music, customs, language, and close friends. Length of stay in the U.S. was measured in months and/or years. Preferences for foods, music, customs, language, and close friends were measured using a 5-point Likert scale (1 = exclusively one's own ethnic group, 5 = exclusively American). These five questions were adopted from the Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA) (Suinn, Rickard-Figueroa, Lew, & Vigil, 1987; Suinn, Ahuna, & Khoom, 1992), and modified to measure the degree of acculturation in various Asian ethnic groups. The validity and reliability of the original SL-ASIA was supported for use in Asian populations (Suinn et al., 1992). The reliability of the modified five questions was also well-supported in previous studies (Im et al., 1999b).

Questions about health and menopausal status included one Likert-scale item about general health, two open-ended questions about diagnosed diseases and medicine, and seven items asking about the last menstrual cycle, menstrual regularity, and menstrual flow. Menopausal status was categorized into pre-menopause, early peri-menopause, late peri-menopause, post-menopause, and surgical menopause based on the data obtained with these seven items. In addition, the conditions that might make menopausal status uncertain were determined using three items. Women who indicated that they had taken hormones, including birth control pills, in the last 3 months were considered hormone users.

The Midlife Women's Symptom Index (MSI) (Im, 2006) was used to measure menopausal symptoms. The MSI was based on the Cornell Medical Index (CMI) and refined in previous studies (Im, 2006). First, the original CMI was modified by adding a section with an additional 14 questions about menopause-related symptoms that were reported in previous studies (Blatt, Wiesbader, & Kupperman, 1953; Im, 1994; Neugarten & Kraines, 1965; Yu & Chi, 1986). In addition, the modified CMI excluded the questions about the family history of diseases. The modified CMI was again refined and used. Then, to reduce the subject's burden and obtain the most useful data, the modified CMI was refined in a study by Im (2006), using the recent literature and three existing menopause-specific instruments (the SWAN study instrument, the Washington Women's Health Diary, and Chi's scale), and reviews from a panel of eight experts in women's health. The revised Internet-based CMI included 88 items and was renamed the MSI. The content validity of the MSI was supported by an expert panel (Im, 2006). The reliability (K-R20 = 0.86) and convergent and construct validity of the MSI were also supported in the same study by Im (2006). In the study by Im (2006), 15 items whose item-total correlations were over .70 or below .30 were eliminated. After eliminating these items, K-R20 was not significantly changed (0.87), but the item-total correlations and the inter-item correlations were improved. The most updated MSI includes 73 items, which can be categorized into physical (items #1–33, #38–55), psychological (items #56–73), and psychosomatic (items #34–37) symptoms. The MSI also includes an open-ended question about other symptoms that the participant might be experiencing that are not included in the MSI. In addition, the MSI includes severity measures (on a 5-point Likert scale: 0 = not at all, 1 = a little bit, 2 = moderately, 3 = quite a bit, 4 = extremely) for each symptom (Im, 2006). The reliability of the MSI was supported in various ethnic groups in the U.S. (test-retest correlation, $r = .94$ to $.98$), and the content validity was supported by expert reviews (Im, Meleis, & Lee, 1999b; Im, 2006). The total numbers of all menopausal, physical, psychological, and

psychosomatic symptoms were calculated by summing the number of the symptoms for these categories. The total severity scores for all menopausal, physical, psychological, and psychosomatic symptoms were calculated by summing the severity of the symptoms for these categories.

Data Collection Procedures

A project website conforming to the Health Insurance Portability and Accountability Act (HIPAA) and the SANS/FBI recommendations was developed and published on an independent, dedicated website server. Participants were recruited by making announcements about the study in ICMWs and ICEMs. When potential participants visited the project website, they first viewed an opening page that explained the general purpose of the study, and then were asked to click to enter the “informed consent sheet.” Informed consent was then obtained via the Internet by asking participants to click the “I agree to participate” button. When they clicked the button, they were queried on whether they met the inclusion criteria (age, literacy, Internet access, and ethnic identity). Then, questions about menopausal status and socioeconomic status were asked. Only those women who had the ethnicity, menopausal status, or socioeconomic status of the categories that still needed participants were automatically redirected to the Internet survey Web page. Those who did not meet the inclusion criteria or who had an ethnicity, menopausal status, or socioeconomic status of the category that did not need more participants were automatically forwarded to a “thank you, but you are not eligible or the group you belong to has been already filled” message page. The Internet protocol addresses of the participants were also monitored to detect multiple submissions by the same person.

When participants were connected to the Internet survey Web page, they were asked to answer questions about background characteristics, ethnic identity, health, menopausal status, and the MSI. While the participants were entering their answers, several random questions that the participants had already answered were repeated to check for consistency in their answers to verify identity.

Data Analysis

The data were analyzed using descriptive and inferential statistics, including ANOVA and chi-square analysis. Sociodemographic characteristics of the participants were summarized with descriptive statistics, including frequencies, percents, means, and standard deviations. To answer research questions 1 and 2, descriptive statistics, including frequencies and percents, were calculated. To answer research question 3, ANOVA and chi-square analysis were used. For the ANOVA, Tukey’s HSD was used to assist in interpreting any significant effects.

Results

Menopausal Symptoms Experienced by Asian American Women

The 10 most frequently reported menopausal symptoms are summarized by sub-ethnicity in Table 2. Across sub-ethnic groups, the most frequently reported symptom was “loss of sexual interest” (49.5%), followed by “aches in back of the neck and skull” (46.2%), “forgetfulness” (46.2%), and “muscle and joint stiffness” (42.9%).

The 10 most severe symptoms reported by the participants are summarized by sub-ethnicity in Table 3. Across sub-ethnic groups, the most severe symptoms women experienced were “forgetfulness” (1.99 ± 1.28), followed by “loss of sexual interest” (1.98 ± 1.31), “difficulty in sleep” (1.89 ± 1.23), “worrying about body” (1.80 ± 1.12), and “aches in the back of the neck and skull” (1.77 ± 0.99). The most severe symptom experienced by Chinese and Korean women

was “forgetfulness”; for Asian Indian women, it was “exhaustion or fatigue”; for Filipino women, it was “difficulty sleeping”; and for other Asian women, it was “loss of sexual interest.”

Sub-ethnic Differences in Menopausal Symptoms

The differences in the total number of the menopausal symptoms by sub-ethnicity are summarized in Table 4. The total number of menopausal symptoms differed significantly by sub-ethnicity ($p < .01$). Filipino women had significantly more menopausal symptoms than did Korean women. The total number of physical, psychosomatic, and psychological symptoms also differed significantly by sub-ethnicity. Filipino women had significantly more physical, psychosomatic, and psychological symptoms than Korean women did.

The differences in the severity scores for menopausal symptoms by sub-ethnicity are summarized in Table 5. The total severity scores for menopausal symptoms differed significantly by sub-ethnicity. Filipino women had significantly higher severity scores for menopausal symptoms than did Korean women. In addition, the total severity scores for psychosomatic and psychological symptoms differed significantly by sub-ethnicity. Filipino women had significantly higher severity scores for psychosomatic and psychological symptoms than did Korean women.

Perceived Causes and Management Strategies

The five most common perceived causes of menopausal symptoms are summarized by sub-ethnicity in Table 6. Across sub-ethnic groups, the most frequently reported cause of symptoms was “menopause.” “Aging” was ranked second by Chinese and Korean women, and fourth by Asian Indian and other Asian women. “Stress” was ranked second by Filipino and other Asian women, and third by Chinese and Korean women.

The five most frequently used management strategies for menopausal symptoms are summarized by sub-ethnicity in Table 7. The most frequently used management strategy by Chinese women was “seeing a doctor”; for Korean, Filipino, and other Asian women, it was “taking medication”; and for Asian Indian women, it was “being mentally strong.” “Resting or relaxing” was the second most frequently used management strategy by Filipino and Korean women, the third most by Asian Indian women and the fourth most by Chinese women.

Discussion

Until recently, researchers consistently reported that the menopausal symptom experience of Asian women tended to be mild and uncomplicated compared to women in other ethnic groups (Sheehy, 1992; Brody, 1997; Berger, 1999). However, recent reports have reported specific sub-ethnic variations in the menopausal symptom experience of Asian women (Haines et al., 2005; Shea, 2006a, 2006b). The findings in this study strongly suggest that there are sub-ethnic differences in the menopausal symptom experience of Asian women: the type, total number, and total severity scores for menopausal symptoms experienced by sub-ethnic groups of Asian American women were clearly different; individual symptoms were experienced differently by different sub-ethnic groups of Asian American women.

The Asian American population is not homogeneous, consisting of at least 30 different sub-ethnic groups (U.S. Census Bureau, 2000). Furthermore, each sub-ethnic group can be divided into multiple sub-groups (e.g., Hong Kong Chinese, Taiwanese, or Chinese from Mainland China, etc.; Chang & Zhan, 2003). Furthermore, each sub-group has a unique cultural background and many do not share the same language (Hill, Lipson, & Meleis, 2003). Thus, considering that the menopausal symptom experience is highly influenced by cultural attitudes toward menopause and menopausal symptoms (Lock, et al., 1988; Lock, 2002), it is not

surprising that there are sub-ethnic differences in the menopausal symptoms experienced by various sub-groups of Asian American women.

Interestingly, the findings of this study indicated that the menopausal symptom experience of Filipino women was significantly different from that of Korean and Chinese women, which disagrees somewhat with the findings of previous studies. However, the similarities in the menopausal symptom experience of Korean and Chinese women observed in this study are consistent with the findings of previous studies. The literature clearly indicates that Korean culture is closely linked to Chinese culture, and Korean women's attitudes toward menopausal symptoms are similar to those of Chinese women (Hill et al., 2003). Chang and Zhan (2003) reported that Chinese women usually gave little attention to menopause, which is reportedly also true of Korean women (Im, 2003). Chang and Zhan (2003) reported that Chinese women appeared to exhibit fewer menopausal symptoms, which may be partly attributable to their reluctance to discuss their sex-related symptoms and self-treatment of symptoms. Im (2003) reported that Korean women had fewer menopausal symptoms than Chinese women, but similar attitudes towards menopausal symptoms, as Chinese women.

The differences in the menopausal symptom experiences of Filipino and Chinese women and of Filipino and Korean women, however, are not consistent with the findings of some previous studies. Previous studies on the menopausal symptom experiences of Filipino women showed similar findings to those for Chinese and Korean women (Berg & Taylor, 1999; Ramoso-Jalbuena, 1994). Filipino women reportedly had positive attitudes toward menopause and the severity of their menopausal symptoms tended to be minimal to mild. However, because Filipino culture is primarily based on Islamic culture, and was greatly influenced by Hispanic culture, Filipino women's cultural attitudes toward menopause and menopausal symptoms could differ from those of Chinese and Korean women, whose cultures are largely based on Confucianism, Buddhism, and Taoism. However, the specific differences about the influences of cultural background on menopausal symptom experience in Asian sub-ethnic groups are not reported in the literature.

As mentioned above, in this paper, we defined sub-ethnicity as the sense of identity associated with a sub-group within an ethnic group defined by regional, tribal, or dialectic backgrounds (Nagata, 2005; Phan & Luk, 2008; Salaff, 2005). However, in most cases in this study, sub-ethnicity referred to country of origin only and not regional, tribal, or dialectic background because we did not collect this information in the larger study. For example, Chinese subgroups might include Mainland Chinese, Hong Kong Chinese, Taiwanese Chinese, Malaysian Chinese, and Singapore Chinese, etc. However, in this study, we did not distinguish among these subgroups and women from these sub-groups were all classified as "Chinese" However, as many scholars have asserted, sub-ethnicity encompasses more than the region or country of origin (Nagata, 2005; Salaff, 2005). Thus, our classification of women into Asian sub-ethnic groups, not by more refined subgroups within these major sub-ethnic groups, may be a major limitation of the study.

Another limitation of this study is that only a small number of women in some of the Asian American sub-ethnic groups participated in the study. Because the sample size for this study was pre-determined by the larger study, the findings in this paper should be considered preliminary and need further confirmation. In addition, the limitations of this study include potential selection bias because participants were recruited via the Internet and data were collected on the Internet. In general, Asian Americans have higher incomes than other ethnic groups in the U.S. (U.S. Census Bureau, 2000); in 2000, the annual median income for Asian families was \$59,324, about \$10,000 higher than the national average. Furthermore, those who have access to and use the Internet tend to be a select group, with higher educations and incomes (Pew Internet & American Life Project, 2005). Therefore, the findings presented in this paper

may not adequately reflect the menopausal symptom experiences of Asian American women from lower socioeconomic classes. Furthermore, because of the small sample size for some sub-ethnic groups, we could not conduct a more sophisticated statistical analysis that controlled other mediating factors (e.g., multiple regression analyses).

Conclusions and Implications

The findings presented in this paper strongly suggest that there are sub-ethnic differences in the menopausal symptom experiences among sub-groups of Asian American women. Some of the findings are consistent with those of previous studies; others are not. As discussed above, these findings may stem from the unique cultural backgrounds within each of the major Asian American ethnic groups, and may not be easily generalizable to other Asian American women, especially those with low socioeconomic status.

Based on the findings of this study, we conclude this paper with the following implications for future research and nursing practice with Asian American midlife women. First, we suggest that further in-depth studies should be conducted on the sub-ethnic variations in the menopausal symptom experiences of a large number of Asian American women from diverse sub-ethnic groups. Because of the lack of information on sub-ethnic differences in menopausal symptoms and the inconsistent findings of previous studies, we could not adequately compare our findings with those of previous studies. More in-depth studies on the sub-ethnic differences in the menopausal symptom experiences of a diversity of Asian American women would help achieve a more comprehensive understanding of the menopausal symptom experiences of Asian American women.

Second, we also suggest that researchers and clinicians be aware of the sub-ethnic differences in the menopausal symptom experiences of Asian American women. Asian American women tend to be clumped into one homogenous group, despite a great degree of sub-ethnic diversity (U.S. Census Bureau, 2000). In fact, Asian Americans are comprised of at least 30 sub-ethnic groups, each with different cultural attitudes and beliefs about menopause and menopausal symptoms (U.S. Census Bureau, 2000). Thus, researchers and clinicians should not minimize their menopausal symptom experience. Rather, researchers and clinicians should respect this diversity when providing health care for Asian American women.

Finally, as discussed above, one of the major limitations of this study is the potential selection bias introduced because the study's participants were recruited via the Internet only, which may have resulted in a sample composed primarily of highly educated Asian American women with high incomes. By conducting studies in Asian American women from a diversity of socioeconomic groups, and controlling for that socioeconomic diversity, we might better understand the sub-ethnic differences in menopausal symptoms.

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Table 1

Sociodemographic characteristics of the participants (N=91)

| Characteristics | n (%) | Characteristics | n (%) |
|--------------------------|-------------|---------------------------------------|----------|
| <i>Age</i> | | <i>Employment Status</i> | |
| Mean (SD) | 49.36(5.88) | Employed | 51(56.0) |
| <i>Education</i> | | Unemployed | 40(44.0) |
| No School | 1 (1.1) | <i>Self-reported Family Income</i> | |
| Middle-school | 3(3.3) | Very hard to pay for basics | 9(9.9) |
| High-school | 10(11.0) | Somewhat hard to pay for basics | 35(38.5) |
| College | 43(47.3) | Not hard to pay for basics | 47(51.6) |
| Graduate degree | 34(37.4) | <i>Availability of social support</i> | |
| <i>Religion</i> | | None of the time | 12(13.2) |
| Protestant | 27(29.7) | A little of the time | 16(17.6) |
| Catholic | 11(12.1) | Some of the time | 35(38.5) |
| Buddhist | 14(15.4) | Most of the time | 28(30.8) |
| No religion | 16(17.6) | <i>Number of children</i> | |
| Others | 23(25.3) | 0 | 7(7.7) |
| <i>Marital status</i> | | 1–2 | 62(68.1) |
| Married | 79(86.6) | 3–5 | 22(24.2) |
| Partnered | 3(3.3) | More than 5 | 0(0.0) |
| Divorced | 3(3.3) | <i>Smoking</i> | |
| Widowed | 2(2.2) | Never | 85(93.4) |
| Single | 4(4.4) | Past | 6(6.6) |
| | | Current | 0(0.0) |
| <i>Sub-ethnic groups</i> | | <i>Self-reported Health Status</i> | |
| Chinese | 31(34.1) | Very unhealthy | 2(2.2) |
| Korean | 16(17.6) | Unhealthy | 12(13.2) |
| Indian | 16(17.6) | Don't know | 9(9.9) |
| Filipino | 11(12.1) | Healthy | 59(64.8) |
| Others | 17(18.7) | Very healthy | 9(9.9) |
| <i>Menopausal status</i> | | <i>Favorite foods</i> | |
| Premenopause | 22(24.2) | Vegetables | 44(48.4) |
| Early perimenopause | 28(30.8) | Fruits | 19(20.9) |
| Late perimenopause | 10(11.0) | Grains | 10(11.0) |
| Postmenopause | 31(34.1) | Dairy products | 4(4.4) |
| Surgical menopause | 0(0.0) | Meats | 14(15.4) |
| <i>BMI</i> | | Others | 0(0.0) |
| Mean (SD) | 24.03(4.39) | | |

Table 2
Top 10 most frequently reported menopausal symptoms among sub-ethnic groups (N=91)

| Total n (%) | Chinese n (%) | Korean n (%) | Indian n (%) | Filipino n (%) | Others n (%) |
|--|--|---|---|--|---|
| Loss of sexual interest 45 (49.5) | Loss of sexual interest 19 (61.3) | Forgetfulness 9 (56.3) | Loss of sexual interest 9 (56.3) | Difficulty sleeping 9 (81.8) | Aches in back of neck and skull 8 (47.1) |
| Aches in back of neck and skull 42 (46.2) | Forgetfulness 18 (58.1) | Muscle and joint stiffness 6 (37.5) | Weight gain 8 (50.0) | Worrying 9 (81.8) | Muscle and joint stiffness 8 (47.1) |
| Forgetfulness 42 (46.2) | Change in vision 16 (51.6) | Change in vision 5 (31.3) | Aches in back of neck and skull 8 (50.0) | Muscle and joint stiffness 8 (72.7) | Hot flash 8 (47.1) |
| Muscle and joint stiffness 39 (42.9) | Feeling anxious or nervous 15 (48.4) | Watery eyes 4 (25.0) | Exhaustion or fatigue 8 (50.0) | Exhaustion or fatigue 8 (72.7) | Change in vision 7 (41.2) |
| Feeling hot or cold 37 (40.7) | Aches in back of neck and skull 15 (48.4) | Aches in back of neck and skull 4 (25.0) | Difficulty sleeping 8 (50.0) | Easily upset 8 (72.7) | Difficulty sleeping 7 (41.2) |
| Worrying about body 37 (40.7) | Feeling hot or cold 15 (48.4) | Severe pain in stomach 4 (25.0) | Night urination 8 (50.0) | Forgetfulness 8 (72.7) | Worrying about body 7 (41.2) |
| Difficulty sleeping 37 (40.7) | Feeling unhappy 13 (41.9) | Feeling depressed 4 (25.0) | Feeling anxious or nervous 7 (43.8) | Ache in back of neck and skull 7 (63.6) | Loss of sexual interest 7 (41.2) |
| Feeling anxious or nervous 33 (36.3) | Worrying about body 13 (41.9) | Loss of sexual interest 4 (25.0) | Worrying about body 7 (43.8) | Feeling hot or cold 7 (63.6) | Weight gain 6 (35.3) |
| Exhaustion or fatigue 31 (34.1) | Night urination 12 (38.7) | Feeling easily hurt 4 (25.0) | Muscle and joint stiffness 6 (37.5) | Itching genitals 7 (63.6) | Feeling hot or cold 6 (35.3) |
| Easily upset 31 (34.1) | Difficulty sleeping 12 (38.7) | Worrying about body 4 (25.0) | Pain in arms or legs 6 (37.5) | Night urination 7 (63.6) | Exhaustion or fatigue 5 (29.4) |

Table 3

Top 10 most severe menopausal symptoms among sub-ethnic groups (N=91)

| Total Mean(SD) | Chinese Mean(SD) | Korean Mean(SD) | Indian Mean(SD) | Filipino Mean(SD) | Others Mean(SD) |
|--|--|--|--|---|--|
| Forgetfulness 1.99 (1.28) | Forgetfulness 2.42 (1.52) | Forgetfulness 1.81 (0.83) | Exhaustion or fatigue 2.13 (1.26) | Difficulty sleeping 2.82 (1.25) | Loss of sexual interest 2.00 (1.28) |
| Loss of sexual interest 1.98 (1.31) | Loss of sexual interest 2.23 (1.41) | Severe pain in stomach 1.56 (1.21) | Weight gain 2.00 (1.10) | Forgetfulness 2.64 (1.12) | Muscle and joint stiffness 1.94 (1.20) |
| Difficulty sleeping 1.89 (1.23) | Difficulty sleeping 1.97 (1.35) | Muscle and joint stiffness 1.56 (0.89) | Night urination 2.00 (1.32) | Loss of sexual interest 2.64 (1.80) | Hot flash 1.88 (1.05) |
| Worrying about body 1.80 (1.12) | Feeling anxious or nervous 1.94 (1.15) | Aches in back of neck and skull 1.44 (0.89) | Aches in back of neck and skull 1.94 (1.18) | Worrying 2.55 (0.95) | Aches in back of neck and skull 1.88 (1.11) |
| Aches in back of neck and skull 1.77 (0.99) | Worrying about body 1.90 (1.19) | Change in vision 1.38 (0.62) | Difficulty sleeping 1.94 (1.24) | Feeling grouchy 2.55 (1.13) | Difficulty sleeping 1.82 (1.13) |
| Muscle and joint stiffness 1.76 (0.99) | Feeling unhappy 1.90 (1.19) | Feeling depressed 1.38 (0.72) | Pain in arms or legs 1.81 (1.17) | Exhaustion or fatigue 2.45 (1.29) | Worrying about body 1.82 (1.19) |
| Exhaustion or fatigue 1.75 (1.17) | Change in vision 1.87 (1.02) | Feeling unhappy 1.38 (0.89) | Mood swing 1.81 (1.28) | Night urination 2.45 (1.29) | Weight gain 1.76 (1.25) |
| Feeling anxious or nervous 1.68 (1.04) | Feeling hot or cold 1.77 (0.96) | Worrying about body 1.31 (0.60) | Frequent urination 1.81 (1.33) | Discomfort during sexual intercourse 2.36 (1.80) | Change in vision 1.71 (0.99) |
| Feeling unhappy 1.68 (1.11) | Aches in back of neck and skull 1.74 (0.93) | Easily upset 1.31 (0.70) | Worrying about body 1.75 (1.07) | Muscle and joint stiffness 2.27 (1.35) | Feeling hot or cold 1.59 (0.94) |
| Night urination 1.66 (1.06) | Exhaustion or fatigue 1.74 (1.26) | Loss of sexual interest 1.31 (0.70) | Feeling anxious or nervous 1.75 (1.13) | Easily upset 2.27 (1.01) | Exhaustion or fatigue 1.59 (1.06) |

Table 4

The mean total numbers of menopausal symptoms by sub-ethnic group.

| Sub-symptoms | Chinese ¹ M(SD) | Korean ² M(SD) | Indian ³ M(SD) | Filipino ⁴ M(SD) | Others ⁵ M(SD) | Range | F | Post-hoc |
|---------------|----------------------------|---------------------------|---------------------------|-----------------------------|---------------------------|-------|--------------------|----------|
| Physical | 9.36(4.96) | 5.33(5.96) | 14.90(16.21) | 17.17(5.71) | 5.80(5.35) | 0–52 | 3.679 ^b | 2,<4 |
| Psychosomatic | 0.42(0.62) | 0.31(0.48) | 0.94(1.06) | 1.27(0.79) | 0.47(0.80) | 0–3 | 4.189 ^b | 1,2,<4 |
| Psychological | 5.90(5.09) | 3.13(4.24) | 5.63(6.17) | 10.09(5.70) | 3.82(4.83) | 0–19 | 3.483 ^a | 2,5,<4 |
| Total | 14.81(9.29) | 8.50(9.13) | 18.25(20.24) | 25.73(11.82) | 11.65(12.16) | 0–74 | 3.602 ^b | 2,5,<4 |

^ap < .05

^bp < .01.

Table 5

The mean severity scores of menopausal symptoms by sub-ethnic group.

| Sub-symptoms | Chinese ¹ M(SD) | Korean ² M(SD) | Indian ³ M(SD) | Filipino ⁴ M(SD) | Others ⁵ M(SD) | range | F | Post-hoc |
|---------------|----------------------------|---------------------------|---------------------------|-----------------------------|---------------------------|-------|--------------------|----------|
| Physical | 1.28(0.21) | 1.12(0.17) | 1.44(0.68) | 1.49(0.25) | 1.28(0.40) | 1-5 | 2.222 | |
| Psychosomatic | 1.35(0.54) | 1.15(0.27) | 1.73(1.05) | 1.88(0.67) | 1.31(0.52) | 1-5 | 3.250 ^a | 2<4 |
| Psychological | 1.64(0.69) | 1.24(0.37) | 1.53(0.81) | 2.01(0.67) | 1.41(0.64) | 1-5 | 2.617 ^a | 2<4 |
| Total | 1.38(0.31) | 1.15(0.22) | 1.47(0.72) | 1.64(0.37) | 1.32(0.43) | 1-5 | 2.456 ^a | 2<4 |

^ap < .05

^bp < .01.

Table 6

Top 5 frequently reported perceived causes of menopausal symptoms among sub-ethnic groups (N=91)

| Sub-ethnic group | Rank | Perceived causes of menopausal symptoms | n (%) |
|--------------------|------|---|-----------|
| Chinese (n=31) | 1 | Menopause | 187(55.7) |
| | 2 | Aging | 26(7.7) |
| | 3 | Stress | 23(6.8) |
| | 4 | I don't know | 15(4.5) |
| | 5 | Lack of exercise | 7(2.1) |
| Korean (n=16) | 1 | Menopause | 12(15.0) |
| | 2 | Aging | 11(13.7) |
| | 3 | Stress | 4(5.0) |
| | 4 | Fatigue | 3(3.8) |
| | 5 | I don't know | 2(2.5) |
| Indian (n=16) | 1 | Menopause | 207(79.3) |
| | 2 | I don't know | 6(2.3) |
| | 3 | Obesity | 5(1.9) |
| | 4 | Aging | 3(1.1) |
| | 5 | Lack of exercise | 2(0.8) |
| Filipino (n=11) | 1 | Menopause | 107(49.8) |
| | 2 | Stress | 11(5.1) |
| | 3 | I don't know | 10(4.7) |
| | 4 | Overwork | 10(4.7) |
| | 5 | Lack of exercise | 6(3.0) |
| Others (n=17) | 1 | Menopause | 98(62.4) |
| | 2 | Stress | 22(14.0) |
| | 3 | Obesity | 16(10.2) |
| | 4 | Aging | 15(9.6) |
| | 5 | I don't know | 7(4.5) |

Table 7

Top 5 frequently reported management strategies for menopausal symptoms among sub-ethnic groups (N=91)

| Sub-ethnic group | Rank | Management strategies | n (%) |
|--------------------|------|---------------------------|----------|
| Chinese (n=31) | 1 | Seeing a doctor | 18(23.8) |
| | 2 | Taking a medicine | 10(12.8) |
| | 3 | Talking with friends | 6(7.7) |
| | 4 | Resting or relaxing | 4(5.1) |
| | 5 | Exercising | 3(3.8) |
| Korean (n=16) | 1 | Taking a medicine | 7(58.3) |
| | 2 | Resting or relaxing | 2(16.7) |
| | 3 | Healthy diet | 1(8.3) |
| | 4 | Accepting aging | 1(8.3) |
| | 5 | Wearing clothes lightly | 1(8.3) |
| Indian (n=16) | 1 | Being mentally strong | 86(59.7) |
| | 2 | Exercising | 9(6.3) |
| | 3 | Resting or relaxing | 8(5.6) |
| | 4 | Taking a medicine | 6(4.2) |
| | 5 | Healthy diet | 4(2.8) |
| Filipino (n=11) | 1 | Taking a medicine | 20(23.5) |
| | 2 | Resting or relaxing | 9(10.6) |
| | 3 | Seeing a doctor | 7(8.2) |
| | 4 | Using natural supplements | 6(7.1) |
| | 5 | Healthy diet | 4(4.7) |
| Others (n=17) | 1 | Taking a medicine | 8(17.0) |
| | 2 | Resting or relaxing | 8(17.0) |
| | 3 | Healthy diet | 6(12.8) |
| | 4 | Exercising | 5(10.6) |
| | 5 | Using natural supplements | 3(6.4) |