



A Cross-Cultural Comparison of Climacteric Symptoms, Self-Esteem, and Quality of Life between Mosuo Women and Han Chinese Women

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Quantitative Study

Abstract

Background: The present study was designed to compare climacteric symptoms, self-esteem, and quality of life (QOL) between women from two different cultures in China (Mosuo and Han Chinese) and to evaluate the interaction among these variables. Mosuo is a small ethnic group in southwest China, which is described as a matriarchal society, while Han Chinese is the largest ethnic group with a patriarchal system.

Methods: This cross-cultural study was conducted on 54 Mosuo women and 52 Han Chinese women between 40 and 60 years of age. The subjects were selected through convenience sampling. They answered a sociodemographic questionnaire, the Menopause Rating Scale (MRS), the Self-Esteem Scale (SES), and the 12-Item Short Form Health Survey (SF-12).

Results: In our sample, Mosuo women obtained lower scores on the psychological and somato-vegetative subscales of the MRS, but higher scores on SES and the mental health-related QOL (SF-12/MCS) than Han Chinese women. However, the correlation between climacteric symptoms, self-esteem, and QOL was weaker in the Mosuo group compared to the Han group. Multiple linear regressions indicated that climacteric symptoms have negatively affected women's QOL.

Conclusion: In accordance with the study hypothesis, Mosuo women showed milder symptoms, a higher self-esteem, and a better QOL compared to the Han Chinese women during the climacteric. The interaction between climacteric symptoms, psychosocial variables, and QOL revealed cultural differences.

Keywords: Climacteric Symptoms, Self-esteem, Quality of life, Cross-cultural comparison, Mosuo

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Introduction

Menopause and the climacteric: The word "climacteric" originated from the Latin word "climactericus", meaning "of a dangerous

period in life". In the medical field, "climacteric" is used to describe the transition period from reproductive to a post-reproductive stage of life, during which the menopause occurs. The term "menopause" is defined by the World Health Organization (WHO) as the permanent cessation of menstruation resulting from the loss of

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ovarian follicular activity (World Health Organization, 1996).

In Chinese, "menopause" is translated into "Jue Jing" which is neutral and the medical term means the end of menstruation, while "climacteric" is translated into "Geng Nian Qi" which covers a wider time span.

Despite being a natural process, not every woman can undergo the climacteric period peacefully. Many epidemiological and clinical studies have shown that the climacteric is a vulnerable window of time for various discomforts (Im, Lee, Chee, Brown, & Dormire, 2010; Sievert, 2014; Melby, Sievert, Anderson, & Obermeyer, 2011).

Climacteric symptoms from the biopsychosocial aspect: As the most popular hypothesis, the fluctuation in hormone levels, for example, a decline in inhibin levels and a rise in pituitary hormone levels (primarily hormone), was assumed to be responsible for the climacteric symptom. Ross (1951) explained climacteric symptom from the psychosomatic medicine standpoint as multiple loss experiences in the biological, psychological, and social spheres, such as the loss of the reproductive ability, the independence of the children, the illness or death of the parents, and or the stagnation of the career which can result in an identity crisis and grief. Inadaptability and inappropriate processing of grief could result in various somato-vegetative and psychological symptoms (Ditz 1999).

Kirmayer and Sartorius (2007) illustrated different cultural influences on the symptom experience including psychophysiology, attention, symptom attribution and interpretation, modes of coping and help-seeking, and treatment. Pimenta, Leal, Maroco, and Ramos (2012) hold the view that the severity of the vast majority of menopausal symptoms was significantly influenced by the way women perceived their recent life conditions and events, rather than hormonal changes. Becker et al. (2001) believed that psychological distress during the climacteric indicates a personal

psychological or physiological vulnerability rather than a specific reaction to the menopausal events.

Self-esteem and quality of life: Self-esteem is defined as a person's overall evaluation of his or her own worth, and reflects the individual's relationship with himself or herself. Self-esteem is regarded as an important individual characteristic that affects an individual's ability to cope with stress and life challenges, and is associated with feelings of worthiness and happiness. Thus, women with high self-esteem feel good about themselves and their social and familial roles (Chedraui et al., 2010; Greenberg, 2008; Bloch, 2002). A higher level of self-esteem is negatively associated with climacteric symptom severity even after menopause (Lee et al., 2010; Elavsky, 2010).

Health-related quality of life (HRQOL) is defined "as the value assigned to duration of life as modified by impairments, functional states, perceptions, and social opportunities that are influenced by disease, injury, treatment or policy." (Patrick & Erickson, 1993). The specific domains of HRQOL include not only symptoms, but also resilience or the capacity to respond to stress, health perceptions, and physical functioning. According to Kumari, Stafford, and Marmot (2005), the menopausal transition is associated with decreased health functioning in women who report menopausal symptoms. However, many studies of menopause operationalize QOL as frequency and severity of symptoms. It is unclear whether perimenopause is related to other domains of HRQOL (Matthews & Bromberger, 2005).

Mosuo and their Culture: The Mosuo, with a population of approximately 40,000, is a small ethnic group living in southwestern China. Most of this ethnic group lives in the town of Yongning near Lake Lugu.

The Mosuo is a well-known "matriarchal society"; however, this term does not fully describe the complex characteristics of the Mosuo society (He, 2008; Shih, 2009; Cai,

2017). Moreover, the Mosuo people live in large households of several generations from the mother's lineage and trace their lineage from the female side of the family. Women are often the head of the house and play a key role in running the household. On the other hand, men (typically uncles and oldest sons) have their own rights to make trades and major decisions in the household.

Another well-known characteristic of the Mosuo is their partnership, named "walking marriage" or "visiting relationship", in which the partners only spend nights together in the woman's room rather than living together. In the morning, the men return to their own family. Both males and females typically belong to their maternal households, both materially and spiritually, throughout their life. In such a cultural context, women are more highly respected and independent than women of other ethnic groups.

To date, many studies have examined the anthropological and sociological aspects of this unique Mosuo culture. Nevertheless, very few texts on the health status of the Mosuo people exist. No literature on Mosuo women's climacteric symptoms can be referred to.

Women and climacteric in the Chinese culture: In the traditional Chinese culture, women's social roles were governed by Confucian ethical principles within the family to reproduce offspring, and to care for the children and the family members of their husband. The obedience and subservience of women to their fathers when young, husbands when married, and sons when widowed are emphasized. Beyond being daughters, wives, and mothers, women were generally not expected to fulfill other social roles (Tang, Chua, & Jiaqing, 2010).

Based on these considerations, our research aims were the following:

- to understand how Mosuo women differ from Han Chinese women in terms of sociodemographic data and climacteric symptoms;
- to analyze the differences in self-esteem and QOL between Mosuo women and Han

Chinese women;

- to determine the strongest correlation between sociodemographic variables, climacteric symptoms, psychological variables, and QOL.

Based on the findings from previous studies, the following hypotheses were tested:

- During the climacteric period, Mosuo women experience milder symptoms on the Menopause Rating Scale than the Han Chinese women.
- Mosuo women have a higher self-esteem.
- Mosuo women have a better QOL.

In multiple linear regressions, the level of QOL, as a dependent variable, significantly correlates with severe climacteric symptoms and lower Self-Esteem Scale (SES) in both groups.

Methods

Study design and subjects: According to the literature review, the inclusion criteria for the study were Mosuo women or Han Chinese women of 40 to 60 years of age. The exclusion criteria were history of alcohol or substance abuse, history of treatment with estrogen replacement or any other drugs affecting the endocrine system (e.g., raloxifene), history of physical disease and/or mental disorders, and post-surgical menopause.

This cross-sectional study was conducted in Yongning, Yunnan Province, P.R. China from May 2014 to June 2014. According to the data from the civil affairs bureau in Yongning, at the time of the study, the total number of female residents in the age range of 40-60 years in Yongning included 1006 Mosuo and 490 Han Chinese women. However, the difference in the population size of the Mosuo and Han Chinese women and the poor infrastructure limited the sampling. Using the G-Power software, the required sample size was estimated for a two-tailed t-test (two independent means) with an effect size of $d = 0.5$ (α err prob = 0.05, Power ($1-\beta$ err prob) = 0.8) and for a critical $t = 1.9789706$, and $df = 126$, which resulted in

a total sample size of $n = 128$. The effect size was based on the 2011 pilot study by the authors. Therefore, a convenience sampling was conducted in the 10 nearest villages (namely, 5 villages of each ethnic group); therefore, 15 women were planned to be recruited from each village.

All of the data collection was conducted by one researcher. Furthermore, a female Mosuo student with high school education was responsible for translating the interview questions into the Mosuo language.

Assessment Instruments: All the women completed the following questionnaires.

Demographic Information: This questionnaire gathered data on ethnicity, age, education level, occupation, family members, family income, religion, marital status, history of smoking or drinking, age at menarche, menstrual status, and medical history.

Menopause Rating Scales: The Menopause Rating Scale (MRS) is an 11-item symptom checklist that is used worldwide to measure symptoms during the climacteric period (Heinemann et al., 2004). Each item is scored on a scale ranging from 0 to 4, with increasing severity of subjectively perceived complaints. If the score of an item is ≥ 1 , the symptom is regarded as present. The 11 items are grouped into 3 subscales, i.e., the psychological, somato-vegetative, and urogenital subscales. The summed scores of these 3 subscales are the composite score. Higher index scores reflect more severe symptoms. Studies have shown that the Chinese MRS exhibits satisfactory reliability and have provided preliminary evidence of the scale's validity (Wang et al., 2008). However, in this study, the "sexual problems" item was not asked because of cultural taboos.

The Self-Esteem Scale (SES): The Self-Esteem Scale (SES) is the most widely used self-report instrument of individual self-esteem and measures both positive and negative feelings regarding one's self (Rosenberg, 1965). The 10-item scale is believed to be one-dimensional. All of the

items are answered using a 4-point Likert scale ranging from strongly agree (score 1) to strongly disagree (score 4). A higher score indicates a higher self-esteem. The Chinese version of the SES is widely used and has good reliability and validity (Ji & Yu, 1993).

The 12-Item Short Form Health Survey:

The 12-Item Short Form Health Survey (SF-12) is a subset of the SF-36 survey which measures the QOL from the patient's perspective (Ware, Kosinski, & Keller, 1996). The health-related quality of life consists of the domains of physical health and functioning, emotional functioning, role limitations and social functioning (Cleary, Wilson, & Fowler, 1994). The SF-12 yields an 8-scale profile of well-being to divide the scores into two groups of physical component summary (PCS) and mental component summary (MCS). A previous study has shown that the SF-12 can be equivalently used in China with its reliable and valid information (Lam, Tse, & Gandek, 2005).

Statistical Analysis: The statistical analysis was performed using SPSS software (version 22.0, IBM Corporation, Armonk, NY, USA). Two groups were defined according to their ethnicity. Independent-samples t-test was used for the comparison of the continuous demographic variables (age, menarche age, family members, and family income) between the two groups and the comparison of group differences in the scores of the four questionnaires (MRS, SES, and SF-12). Chi-square test or Fisher's exact probability test was used for the comparison of the categorical demographic variables (occupation, educational level, and marital status) between the two groups and the differences in symptoms-reporting rates from MRS.

Pearson's correlations (r) were conducted to examine the relationship between the questionnaire scores. Multiple linear regressions were performed in each group.

For the separate analysis of Mosuo women and Han Chinese women, physical QOL and psychological well-being were treated separately as dependent variables and examined in relation to the independent variables of continuous demographic variables (age, age at menarche, number of family members, and family income), 3 subscales of MRS, and total score of the SES. A stepwise method was applied in the regression and criteria for selection were $P = 0.050$ for entry and $P = 0.100$ for removal. The interrelationships found in the best fit models were interpreted.

Results

Study sample

A total of 66 Mosuo women and 65 Han Chinese women were contacted, and 58 Mosuo and 56 Han Chinese provided informed consent for participation in the study. However, 4 Mosuo and 4 Han Chinese women were excluded because of serious physical diseases. The final sample consisted of 54 Mosuo and 52 Han Chinese women.

Clinical measures

Sociodemographic characteristics: Table 1 shows the demographic characteristics of the Mosuo and Han Chinese women.

Table 1. Sociodemographic characteristics

| Variables | Mosuo (n = 54) | Han Chinese (n = 52) | χ^2/t | P-value |
|---|------------------------|-----------------------|------------|---------|
| Age (years) (Mean \pm SD) | 47.85 \pm 4.16 | 48.65 \pm 4.93 | -0.91 | 0.367 |
| Educational level (%) | | | 0.31 | 1.000 |
| Primary school | 52 (96.3) | 51 (98.1) | | |
| Junior middle school | 2 (3.7) | 1 (1.9) | | |
| Occupation (%) | | | 3.96 | 0.266 |
| Peasants | 48 (88.7) | 51 (98.1) | | |
| Administrators | 1 (1.9) | 0 (0.0) | | |
| Business women | 3 (5.6) | 1 (1.9) | | |
| Unemployed | 2 (3.7) | 0 (0.0) | | |
| Family members (Mean \pm SD) | 5.94 \pm 4.62 | 2.86 \pm 1.35 | 3.08* | 0.003 |
| Number of children (Mean \pm SD) | 2.26 \pm 0.71 | 2.50 \pm 0.75 | -1.70 | 0.092 |
| Family Income (RMB ^a /year/person) (Mean \pm SD) | 3197.42 \pm 4240.65) | 2107.38 \pm 1278.59 | 1.96 | 0.055 |
| Religious (%) | | | | < 0.001 |
| Daba/Buddhism | 54 (100.0) | 0 (0.0) | | |
| Others | 0 (0.0) | 0 (0.0) | | |
| None | 0 (0.0) | 52 (100.0) | | |
| Marital status (%) | | | 43.17** | < 0.001 |
| Walking marriage ^b | 25 (46.3) | 0 (0.0) | | |
| Traditional marriage ^c | 18 (33.3) | 46 (88.5) | | |
| Divorced | 8 (14.8) | 1 (1.5) | | |
| Widowed | 3 (5.6) | 5 (8.6) | | |
| Smoking ^d /Drinking (%) | | | 5.67* | 0.032 |
| No | 46 (85.2) | 51 (98.1) | | |
| Yes | 8 (14.8) | 1 (1.9) | | |
| Menarche age (years) (Mean \pm SD) | 17.66 \pm 2.15 | 15.42 \pm 2.60 | 4.82** | < 0.001 |
| Menstrual status ^e (%) | | | 8.49* | 0.014 |
| Premenopausal | 32 (59.3) | 24 (46.2) | | |
| Perimenopausal | 16 (29.6) | 10 (19.2) | | |
| Postmenopausal | 6 (11.1) | 18 (34.6) | | |
| History of premenstrual syndrome (PMS) | | | 5.14* | 0.023 |
| No | 41 (75.9) | 28 (54.9) | | |
| Yes | 13 (24.1) | 23 (45.1) | | |

SD: Standard deviation; * $P < 0.05$; ** $P < 0.01$; ^a RMB: Ren Min Bi, currency in China; ^b Walking marriage: see "Introduction-Mosuo and their culture"; ^c Traditional marriage: Monogamous marital relationship. One man and one woman who were married and living together in a nuclear family or with the parents from the man's side of the family; ^d Smoking average: Five cigarettes per day; ^e Premenopause: Regular cycling. I have experienced a menstrual period during the two months prior to the study; Perimenopausal: Irregular cycling. I have experienced a menstrual period between three and eleven months prior to the study.; Postmenopausal: I have experienced a last menstrual period at least twelve months prior to the study.

The two ethnic groups differed significantly on several characteristics. The Mosuo women were mostly living in their larger extended family with several generations and more family members ($P = 0.003$). All Mosuo women practiced two coexisting beliefs; their own syncretic faith called Daba and also the Tibetan Buddhism ($P < 0.001$). Among the Mosuo women, the "walking marriage" was dominant ($P < 0.001$). The Mosuo women had a higher percentage of smokers and drinkers ($P = 0.030$). The menarche age of Mosuo averaged later than that of Han Chinese ($P < 0.001$). Fewer Mosuo women reported premenstrual syndrome ($P = 0.020$).

Comparison of MRS: The climacteric symptoms were assessed using the scales of the MRS (excluding sexual symptoms because of the cultural taboo). The 3 most frequently experienced symptoms among Mosuo women were muscle and joint pain, heart discomfort, and physical and mental exhaustion. However, the most frequent symptoms in descending order among the Han Women were anxiety, muscle and joint aches, physical and mental exhaustion, and irritability. The least detected symptom was bladder problems in Mosuo women and vaginal dryness in Han Chinese women.

Compared with Han Chinese women during the climacteric, Mosuo women reported heart discomfort ($P = 0.030$), sleep problems ($P = 0.020$), depressive mood ($P = 0.04$), irritability ($P < 0.001$), anxiety ($P < 0.001$), physical and mental exhaustion ($P = 0.040$), and vaginal discomfort ($P = 0.020$) less frequently. The comparison of symptom frequencies is presented in table 2.

As shown in table 3, the mean score of the psychological dimension ($P < 0.001$) and the somato-vegetative subscales ($P = 0.047$), and the total score of the MRS ($P = 0.002$) in the Mosuo group were lower than that in the Han Chinese group.

Comparison of the Self-Esteem Scale and 12-Item Short Form Health Survey between Mosuo and Han Chinese groups: Compared

with Han Chinese women, Mosuo women scored significantly higher on the SES ($P = 0.006$).

In terms of physical health, there was no significant difference between the groups ($P = 0.129$). However, in the psychological well-being aspects, the Mosuo women scored higher than the Han women ($P < 0.001$) (Table 4).

Relationships between the Menopause Rating Scale, Self-Esteem Scale, and 12-Item Short Form Health Survey within Mosuo and Han Groups: The results of the Pearson correlation among the 3 questionnaires and their subscales are recorded in table 5. Within the Mosuo group, only the mean score of the reported somato-vegetative symptoms were negatively related to SES ($r = -0.360$, $P = 0.040$). The mean score of psychological (PCS: $r = -0.381$, $P = 0.070$; MCS: $r = -0.579$, $P < 0.001$) and somato-vegetative symptoms (PCS: $r = -0.458$, $P < 0.001$; MCS: $r = -0.387$, $P = 0.06$) were negatively related to SF-12. However, in the Han group, mean scores of the 2 dimensions of MRS score (psychological subscale: $r = -0.482$, $P < 0.001$; somato-vegetative subscale: $r = -0.392$, $P = 0.040$) and all mean scores of the 3 dimensions of SF-12 (PCS: psychological subscale: $r = -0.502$, $P < 0.001$; somato-vegetative subscale: $r = -0.543$, $P < 0.001$; urogenital subscale: $r = -0.290$, $P = 0.043$; MCS: psychological subscale: $r = -0.786$, $P < 0.001$; somato-vegetative subscale: $r = -0.594$, $P < 0.001$; urogenital subscale: $r = -0.304$, $P = 0.034$) were negatively related to SES.

The mean total score of SES of the Mosuo women was positively correlated with the physical QOL ($r = 0.432$, $P = 0.002$). Nevertheless, within the Han group, the mean total score of SES had a positive correlation with the physical ($r = 0.501$, $P < 0.001$) as well as mental QOL ($r = 0.446$, $P = 0.001$).

Predictive variables of 12-Item Short Form Health Survey: Table 6 shows the strongest statistical predictive variables for physical and psychological well-being in the Mosuo and Han groups separately.

Table 2. Frequency of symptoms according to the Menopause Rating Scale between Mosuo and Han women

| Items | Mosuo (n = 54) | Han (n = 52) | Frequencies (n = 106) | χ^2 | P-value |
|---|-------------------|-----------------|--------------------------|----------|---------|
| Hot flashes, sweating (episodes of sweating) | | | | 4.412 | 0.220 |
| None | 42 (77.8) | 31 (59.6) | 73 (68.9) | | |
| Mild | 8 (14.8) | 13 (25.0) | 21 (19.8) | | |
| Moderate | 3 (5.5) | 7 (13.5) | 10 (9.4) | | |
| Severe | 1 (1.9) | 1 (1.9) | 2 (1.9) | | |
| Heart discomfort (unusual awareness of heart beat, heart skipping, heart racing, tightness) | | | | 9.039* | 0.029 |
| None | 23 (42.6) | 20 (38.5) | 43 (40.6) | | |
| Mild | 24 (44.4) | 13 (25.0) | 47 (34.9) | | |
| Moderate | 6 (11.1) | 17 (32.7) | 23 (21.7) | | |
| Severe | 1 (1.9) | 2 (3.8) | 3 (2.8) | | |
| Sleeping problems (difficulty in falling asleep, difficulty in sleeping through the night, waking up early). | | | | 11.695* | 0.020 |
| None | 31(57.4) | 22 (42.3) | 53 (50.0) | | |
| Mild | 18 (33.3) | 12 (23.1) | 30 (28.3) | | |
| Moderate | 3 (5.6) | 15 (28.8) | 18 (1.7) | | |
| Severe | 2 (3.7) | 2 (3.8) | 4 (3.8) | | |
| Extremely Severe | 0 (0.0) | 1 (1.9) | 1 (0.9) | | |
| Depressive mood (feeling down, sad, on the verge of tears, lack of drive, mood swings)- | | | | 8.330* | 0.04 |
| None | 35 (64.8) | 23 (44.2) | 58 (54.7) | | |
| Mild | 14 (25.9) | 14 (26.9) | 28 (26.4) | | |
| Moderate | 5 (9.3) | 12 (23.1) | 17 (16.0) | | |
| Severe | 0 (0.0) | 3 (5.8) | 3 (2.8) | | |
| Irritability (feeling nervous, inner tension, feeling aggressive) | | | | 21.562* | <0.001 |
| None | 39 (72.2) | 16 (30.8) | 55 (51.9) | | |
| Mild | 11 (20.4) | 16 (30.8) | 27 (25.5) | | |
| Moderate | 4 (7.4) | 17 (32.7) | 21 (19.8) | | |
| Severe | 0 (0.0) | 3 (5.8) | 3 (2.8) | | |
| Anxiety (inner restlessness, feeling panicky) | | | | 24.151* | <0.001 |
| None | 36 (66.7) | 11(21.2) | 47(44.3) | | |
| Mild | 13(24.1) | 21(40.4) | 34 (32.1) | | |
| Moderate | 5 (9.3) | 20 (38.5) | 25(23.6) | | |
| Physical and mental exhaustion (general decrease in performance, impaired memory, decrease in concentration, forgetfulness) | | | | 8.203* | 0.042 |
| None | 28 (51.9) | 16 (30.8) | 44 (41.5) | | |
| Mild | 20 (37.0) | 20 (38.5) | 40 (37.7) | | |
| Moderate | 4 (7.4) | 13 (25.0) | 17 (16.0) | | |
| Severe | 2 (3.7) | 3 (5.8) | 5 (4.7) | | |
| Bladder problems (difficulty in urinating, increased need to urinate, bladder incontinence) | | | | 3.684 | 0.158 |
| None | 45 (83.3) | 35(67.3) | 80 (75.5) | | |
| Mild | 6 (11.1) | 11(21.2) | 17 (16.0) | | |
| Moderate | 3 (5.6) | 6 (11.5) | 9 (8.5) | | |
| Vaginal dryness (sensation of dryness or burning in the vagina, difficulty with sexual intercourse) | | | | 8.251* | 0.016 |
| None | 36 (66.7) | 36 (69.2) | 72 (67.9) | | |
| Mild | 18 (33.3) | 10 (19.2) | 28 (26.4) | | |
| Moderate | 0 (0.0) | 6 (11.5) | 6 (5.7) | | |
| Joint and muscular discomfort (pain in the joints, rheumatoid complaints) | | | | 4.976 | 0.290 |
| None | 8 (14.8) | 13 (25.0) | 21 (19.8) | | |
| Mild | 20 (37.0) | 10 (19.2) | 30 (28.3) | | |
| Moderate | 17 (31.5) | 21 (40.4) | 38 (35.8) | | |
| Severe | 8 (14.8) | 7 (13.5) | 15 (14.2) | | |
| Extremely Severe | 1 (1.9) | 1 (1.9) | 2 (1.9) | | |

All % are column percentages; *P < 0.050

Table 3. Comparison of Menopause Rating Scale between Mosuo and Han women

| Factors | Mosuo (Mean ± SD) (n = 54) | Han (Mean ± SD) (n = 52) | t | P-value |
|-------------------|----------------------------------|--------------------------------|----------|---------|
| Psychological | 1.85 ± 1.99 | 4.27 ± 2.88 | -5.017** | < 0.001 |
| Somato-vegetative | 3.11 ± 2.07 | 4.08 ± 2.81 | -2.010* | 0.047 |
| Urogenital | 0.56 ± 0.84 | 0.87 ± 1.40 | -1.590 | 0.115 |
| Total Score | 5.26 ± 3.52 | 8.04 ± 5.22 | -3.203* | 0.002 |

SD: Standard deviation; *P < 0.050; **P < 0.001

In the Mosuo group, somato-vegetative symptoms ($\beta = -0.353$, $P = 0.011$) and self-esteem ($\beta = 0.315$, $P = 0.021$) were the predictive variables for physical QOL and psychological symptoms ($\beta = -0.549$, $P < 0.001$) and family income ($\beta = 0.247$, $P = 0.043$) predicted psychological well-being.

In the Han group, somato-vegetative symptoms ($\beta = -0.379$, $P = 0.003$), self-esteem ($\beta = 0.312$, $P = 0.013$), and age ($\beta = 0.271$, $P = 0.019$) were the predictive variables for physical QOL. Furthermore, severe psychological symptoms ($\beta = -0.786$, $P < 0.001$) predicted poor psychological well-being.

Discussion

The present cross-sectional study was performed to compare climacteric symptoms, and level of self-esteem and QOL between Mosuo women and Han women.

Sociodemographic characteristics: The study subjects lived in the same geographical region. The average age of the participants in the two groups was approximately 48 years. Most of them had only attended primary school and were engaged in farming. The annual family income for each individual was about 2000-4000 RMB. In all these aspects, the differences between Mosuo and Han Chinese women were statistically

insignificant. The typical ethnic and cultural differences are reflected in discrepancies in terms of family members, religious beliefs, marital status, and menarche age, which were in line with the qualitative research.

Remarkably and interestingly, Mosuo women had a much higher percentage of smokers and drinkers, but none of them were addicted to either one.

Climacteric symptoms: There was a wide range of literature reporting about the different climacteric symptoms in different cultural groups.

In this study, we found several similarities between the 2 ethnic groups. The most reported physical symptom for both groups was joints and muscle complaints. The vasomotor symptoms, which are the symptoms associated with declining estrogen levels, were less commonly mentioned. Furthermore, urogenital symptoms were the least reported subgroup for both ethnic groups. These results are comparable to many international and Chinese studies (Shea, 2006; Huang, Xu, & Jaisamrarn, 2010; Gold et al., 2004) that suggest that non-Western women suffer primarily from non-specific somatic symptoms during the climacteric period rather than vasomotor symptoms as reported in the Western view of menopause.

Table 4. Comparison of the Self-Esteem Scale and 12-Item Short Form Health Survey between Mosuo and Han women

| Factors | Mosuo (Mean ± SD) (n = 54) | Han (Mean ± SD) (n = 52) | t | P-value |
|----------|----------------------------------|--------------------------------|---------|---------|
| SES | 29.72 ± 3.56 | 27.73 ± 3.71 | 2.823* | 0.006 |
| SF12/PSC | 44.32 ± 9.90 | 41.35 ± 9.29 | 1.530 | 0.129 |
| SF12/MCS | 48.41 ± 8.61 | 39.18 ± 13.52 | 4.032** | < 0.001 |

* P < 0.010, ** P < 0.001; SES: Self-Esteem Scale; SF12/PSC: SF-12/Physical component summary score; SF12/MCS: SF-12/Mental component summary

Table 5. Pearson correlations (*r*) of the Menopause Rating Scale, Self-Esteem Scale, and 12-Item Short Form Health Survey

| | SES ^b | | SF-12 /PCS | | SF-12 /MCS | |
|-------------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|
| | Mosuo (n = 54) | Han (n = 52) | Mosuo (n = 54) | Han (n = 52) | Mosuo (n = 54) | Han (n = 52) |
| Psychological | -0.081 | -0.482*** | -0.381** | -0.502*** | -0.579*** | -0.786*** |
| Somato-vegetative | -0.306* | -0.392** | -0.458*** | -0.543*** | -0.387** | -0.594*** |
| Urogenital | -0.162 | -0.181 | -0.261 | -0.290* | -0.017 | -0.304* |
| MRS total score | -0.268** | -0.490*** | -0.490*** | -0.587*** | -0.464*** | -0.744*** |
| SES | | | 0.432** | 0.501*** | 0.185 | 0.446** |

* P < 0.05; ** P < 0.01; *** P < 0.001; MRS: Menopause Rating Scale; SES: Self-Esteem Scale; SF12/PSC: SF-12/Physical component summary score; SF12/MCS: SF-12/Mental component summary

However, significant differences between the 2 groups were also indicated. Mosuo women reported fewer vasomotor symptoms, fewer psychological symptoms, as well as less physical and mental exhaustion in comparison to the Han women. Regarding the severity of the symptoms, the psychological and somatic symptoms in the Mosuo group were milder, thus confirming the first hypothesis.

Additionally, it is also interesting to note that the predominant cluster of symptoms in the Mosuo group was somato-vegetative symptoms; whereas, psychological symptoms were the most commonly reported problems in the Han group.

Self-esteem: The comparison of self-esteem partially confirmed the second hypothesis; namely, that Mosuo women have higher self-esteem than Han Chinese women. There was

strong quantitative evidence for the qualitative data (He, 2008; Shih, 2009; Cai, 2017). Chedraui et al. (2010) held the view that lower self-esteem was not related to the aging process per se, yet it had a relation to the socio-demographic female/male aspects. Mosuo females work harder than males in both domestic and agricultural spheres and the partners do not live together. In this sense, Mosuo women lead their lives as mothers and important family members, who share an equal position with men. They are likely to develop greater resourcefulness and coping skills; thereby, leading to a greater sense of personal and familial control and growth. These factors could all be helpful in establishing a higher self-esteem and addressing the identity crisis during the climacteric period (Markus & Kitayama, 1991; Brewer & Chen, 2007; Brewer & Gardner, 1996).

Table 6. Multiple linear regression predicting 12-Item Short Form Health Survey

| Dependent | Minority | Model | Standardized coefficient β | Adjusted R ² | F | P-value |
|------------|-------------------|--------------------------------|----------------------------------|-------------------------|--------|---------|
| SF-12 /PCS | Mosuo (n = 54) | Somato-vegetative ^a | -0.353 | 0.267 | 9.567 | < 0.001 |
| | | SES | 0.315 | | | 0.011 |
| | Han (n = 52) | Somato-vegetative | -0.379 | 0.425 | 12.813 | < 0.001 |
| | | SES | 0.312 | | | 0.003 |
| | | Age | 0.271 | | | 0.013 |
| | | | | | | 0.019 |
| SF-12 /MCS | Mosuo (n = 54) | Psychological ^b | -0.549 | 0.336 | 12.884 | < 0.001 |
| | | Income | 0.247 | | | 0.000 |
| | Han (n = 52) | Psychological ^c | -0.786 | 0.610 | 75.964 | < 0.001 |
| | | | | | | 0.000 |

^a Somato-vegetative: Somato-vegetative subscale of the Menopause Rating Scale ; ^b Psychological: Psychological subscale of the Menopause Rating Scale (MRS); SES: Self-Esteem Scale; SF12/PSC: SF-12/Physical component summary score; SF12/MCS: SF-12/Mental component summary; Independent variables: Age, age at menarche, number of family members, and family income, three subscale scores of MRS, total score of the SES.

Quality of life during the climacteric: As an important outcome of the evaluation of both function and disease progression, it can be stated that social functioning is different from symptomology. A greater social dissatisfaction and a lower level of social functioning were reported as significant factors for climacteric women's demand for medical care (Montero, Ruiz, & Hernandez, 1993).

As the study showed, no significant difference was found in terms of physical well-being between the groups, in spite of the differences in the severity of the somatic symptoms. Nevertheless, in terms of psychological well-being, the Mosuo women were less likely to be reported as being impaired. Kroenke, Spitzer, and Williams (2002) were of the opinion that somatic and psychological symptoms have differential effects on various dimensions of QOL.

Interaction between climacteric symptoms, self-esteem, and quality of life:

The forth hypothesis regarding the relationship between climacteric symptoms, self-esteem, and QOL was partially confirmed.

First, the correlation between climacteric symptoms, self-esteem, and QOL was weaker in the Mosuo group compared to the Han group. In the Mosuo group, lower self-esteem correlated with severe somatic symptoms, but the correlation with the psychological symptoms was not significant. This suggests that self-esteem had different impact on the symptoms severity and QOL in each group. High self-esteem was more important for Han women in protecting them from climacteric symptoms.

Second, it is worth noting that for both, the Mosuo group and the Han group, a negative correlation was found between the severity of the symptoms and QOL. Somatic symptom was one of strongest predictive variables for physical well-being and psychological symptom was one of strongest predictive variables for mental well-being. As evident in other studies, the presence of climacteric symptoms was associated with a decreased health-related quality of life of the

women (Matthews & Bromberger, 2005). Many studies have shown that the climacteric negatively impacts QOL (Dennerstein, Lehert, & Guthrie, 2002; Mishra, Brown, & Dobson, 2003); however, this negative impact is not related to the menopausal status (i.e., the fluctuation or cessation of menses) alone, but to the menopausal symptoms (Avis, Assmann, Kravitz, Ganz, & Ory, 2004; Kumari et al., 2005; Cheng, Lee, Wang, Wang, & Fuh, 2007). Nevertheless, in the Mosuo group, the correlation between psychological symptoms and physical functioning as well as somatic symptoms and mental functioning are weaker compared to the results of the Han Chinese group. The cultural differences in the association between body and psyche are reflected in this sense.

It is also interesting to note that self-esteem is a predictor of physical QOL, but not mental QOL. It was found that, in addition to the severity of somatic symptoms, the psychological variable of self-esteem is also of importance in physical well-being.

To summarize, Mosuo women and Han women are heterogeneous populations, this results in different interactions of symptoms, psychosocial variables, and QOL during the climacteric.

Limitations: The present findings must be interpreted with caution with respect to several limitations. First, the sample size was not sufficiently large to be representative. Therefore, the ethnic differences in climacteric symptoms, QOL, and self-esteem cannot be generalized to all the women in this region. The comparability with studies on other cultural groups is also limited. Moreover, the reliability and validity of the instruments used were limited because of the cross-cultural context and the Mosuo participants' lack of knowledge of the Chinese language. Furthermore, these multiple variables and their multicollinearity limit the interpretation of the correlation analysis and the multiple linear regressions.

Conclusion

As concluded in previous studies (Sievert &

Obermeyer, 2012; Melby, Lock, & Kaufert, 2005), although menopause is universal, the experience and meaning of menopause and the climacteric period vary across countries and cultures.

The present study provides some preliminary support for the beneficial effects of Mosuo culture for women during the climacteric. Mosuo women during the climacteric period reported milder symptoms, particularly in terms of psychological symptoms, as well as higher self-esteem and better psychological QOL compared with Han Chinese women.

This way of evaluation of symptoms, standards of psychosocial variables, and QOL is different from the ways in which culture is understood in other sub-disciplines of anthropology and sociology. It is implicated that cultural ideologies, norms, and meanings interacted with biopsychological variables during the climacteric. Future research with larger samples and more comprehensive evaluation is necessary to obtain a more representative and informative result.

Conflict of Interests

Authors have no conflict of interests.

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