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Association of Menopausal Symptoms with Body Composition Pattern and Body Mass Index Across Menopausal Age Among Mongolian Women

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Objectives: To investigate the correlation of body fat distribution pattern and body mass index (BMI) on the prevalence and clinical manifestation of menopausal symptoms across the menopausal stage among Mongolian women. **Methods:** A survey was conducted amongst a total of 1084 women aged 40-65 years Ulaanbaatar city and selected provinces representing five main remote regions of Mongolia. A questionnaire was used to collect demographic and socioeconomic data. Menopause related characteristics were evaluated using the Menopause-specific Quality of Life (MENQOL) questionnaire. Further, measurements were recorded to determine waist-to-hip-ratio and body mass index (BMI). Pearson's Chi-Square test was used to correlate. **Results:** Using the waist-to-hip-ratio, 84.4% of participants had the android type, and 15.6% were of the gynoid type. As for BMI, 38.4% were overweight, and 28.8% were obese. In multiple regression analysis, BMI had significant relationships with psychosocial and sexual problems ($p<0.05$). Moreover, BMI and menopause status were independent risk factors for the development of cardiovascular disease. Postmenopausal obese and overweight women were 1.6 times more likely to have cardiovascular disease than women in the perimenopausal status ($p<0.05$). **Conclusions:** Overweight and obese perimenopausal women have a lower quality of life due to the prevalence of sexual and psychosocial symptoms. Obese postmenopausal Mongolian women are at significantly higher risk of developing cardiovascular disease.

Keywords: Menopausal Symptoms, Body Composition, BMI, CVD Risk, Mongolia

Introduction

Menopause is a phase of women's life defined as the permanent cessation of menstrual cyclicity and reproductive function caused by the depletion of sex hormones. It's not a type of disease but rather a stage in biological and physiological events and may bring about a wide range of health complaints and increase some risks of illnesses. Clinically, menopause is defined as the absence of menses for 12 consecutive months. The menopausal transition occurs in the few years preceding menopause and is characterized by progressive alterations in endocrine and reproductive function, with an average duration

of 4 years, ending one year after the final menstrual period [1]. The menopausal transition is associated with weight gain and increased central body fat distribution; the majority of evidence suggests that changes in weight are due to chronological aging, whereas changes in body composition and fat distribution pattern are primarily due to ovarian aging.

Women may experience specific physical and psychological changes and face various problems such as obesity-related cardiometabolic [2], urogenital [3], neurological and psychosocial [4] characteristics across all perimenopausal, and postmenopausal stages, which is of great concern for women's quality of life and long-term health. Several previous epidemiological and clinical evidence suggests that menopause is a critical window for increases in total body weight and alterations in adipose tissue distribution due to hormonal changes [5,6,7]. This affects not only physical and mental health but also life satisfaction and overall quality of life [8,9].

The prevalence of various menopausal symptoms, as well as symptom severity, varies depending on the geographic, socioeconomic and cultural context of a country in which women live [8,9]. Several studies observed remarkable ethnic-specific differences in BMI and fat mass of the Mongolian population compared to Caucasians and even other Asian countries [10,11]. Anthropometric comparisons show that Asian people have more subcutaneous and abdominal fat than Caucasians. Such high abdominal fat at low BMI levels in Asians can be partly explained by the differences in trunk-to-leg-length ratio, physical activity and diet [12]. However, despite being an Asian country, in a comparative study, Mongolians had high abdominal fat and high BMI levels, which might be assumed to be similar to those in Caucasians' relative parameters constituting high risks of obesity-related disorders [10,11]. According to the Mongolian National Health indicator 2016, the leading cause of female mortality was cardiovascular disease.

It is commonly believed that loss of estrogen during menopause is associated with weight gain, and most studies do not reveal increases in BMI independent of normal aging [5,6]. However, even in the absence of weight gain, body fat distribution changes across the menopause stage [13,14]. In recent years, central distribution and accumulation of adipose tissue and concomitant insulin-resistant dyslipidemic state have emerged as important components of a cluster of metabolic abnormalities strongly related to coronary heart disease [15]. Cross-sectional and longitudinal studies have shown that the menopausal transition is associated with a preferential increase in abdominal adiposity, independent of age and total body adiposity [15].

Poehlman et al. [16] prospectively compared premenopausal women to age-matched postmenopausal women. They found that the transition to menopause was associated with an increase in the waist to hip ratio and total body fat. Abdominal fat, measured by CT scan, has also been shown to increase with menopause in both cross-sectional and prospective studies [14].

The trunk fat mass and visceral fat increase drastically during the menopausal transition, especially in overweight and obese women [17]. From previous studies, women with larger waist circumferences or waist-hip-ratio reported higher needs for social support [18]. Psychosocial distress and impaired quality of life may be are consequences, instead of the etiology of the body weight. However, Bjorntorp [19] hypothesized that increased stress, resulting in increased levels of catecholamines and adrenal cortical hormones, may lead to symptoms of hypercortisolism and increased abdominal body fat.

The prevalence of various menopausal symptoms, and symptom severity, varies depending on the anthropometric, geographic, socioeconomic and cultural context of a country in which women live [20-22]. Several studies observed ethnic-specific, remarkable differences in BMI and fat mass of Mongolians compared to Caucasians and even other Asians [23]. Anthropometric comparisons have shown that the Mongolian population has a different trunk-to-leg-length ratio but more subcutaneous and abdominal fat, similar to other Asian women. And Mongolians had excessive abdominal fat and high BMIs, which might be assumed to confer a high risk of obesity-related disorders, similar to those in Caucasians [24]. According to the Mongolian National Health indicator 2016, the leading cause of female mortality was cardiovascular disease.

For Mongolian women, an android-type body fat distribution pattern or high BMI may worsen the vasomotor and psychosocial symptoms [15]. A study of the health conditions and risk factors of menopausal women has shown that menopausal symptoms are high in frequency and severity. The onset of menopausal symptoms starts relatively early in menopause, menopause duration extended, and short-and long-term health risks increased with high BMI [25]. In a study of obesity prevalence in Mongolia, 78.4% of women in the postmenopausal age group

(55-64 years) were overweight. This was the highest prevalence of overweight compared to any other age group [23].

Concerning life expectancy and the average age of menopause in Mongolia being 49.3 years [25], women may expect to spend more than one-third of their lives in the hypoestrogenic condition, after having gone through menopause. Therefore, we aimed to explore the correlation of body fat patterns and body mass index with clinical manifestations of obesity-related menopausal symptoms specifically across menopausal stages [26]. This will help implement lifestyle management measures for overweight and obese women from the early menopausal transition period, based on practical, individualized healthcare planning programs to prevent cardiovascular diseases and improve quality of life in the peri and postmenopausal ages.

Our study aimed to correlate the onset of body fat redistribution and body mass index on the prevalence of menopausal symptoms across menopause stages and their effect on cardiovascular disease in Mongolian menopausal women.

Materials and Methods

Study design

We conducted a cross-sectional study using the Menopause-specific Quality of Life (MENQOL) questionnaire to evaluate the menopause-specific quality of life indicators in peri and postmenopausal women who visited their physician, family doctor and gynecologists for health screenings at the public health centers in provinces and the main district clinics of Ulaanbaatar city between June - August 2017. Data and sample size were calculated, comprising participants representing all five main geographical regions of Mongolia and the targeted age of the population. We recruited 1835 women ages 40 to 65, in the premenopausal and postmenopausal stage according to the definition of STRAW +10 [26]. Of the 1835 women recruited, 1043 fulfilled the criteria for the study.

We excluded women with a history of hormonal treatment within the last six months, a history of chemotherapy or radiation, and a history of abnormal thyroid function. The study was explained to all the subjects, and their informed consent was obtained. After obtaining informed consent, each subject answered a questionnaire. The study was conducted according to the ethical principles of the Declaration of Helsinki, and our study protocol was approved by the Ethical Committee of the Mongolian Ministry of Health.

Measurements

The waist circumference, hip circumference, and height were measured according to World Health Organization recommendations. Weight was measured in kilograms. The waist-hip ratio (WHR) was calculated, and body fat distribution patterns were identified as either android (WHR > 0.85) or gynoid (WHR ≤ 0.85). The waist circumference measurement was taken at the approximate midpoint between the lower margin of the last palpable rib and the top of the iliac crest. The hip circumference measurement was taken around the widest portion of the buttocks. The BMI was calculated and stratified into three groups: normal weight, overweight, and obese by WHO guidelines. Weight and height measurements were taken while the subjects were standing in light clothes without footwear. The BMI was calculated by dividing the subject's mass in kg by her height in meters squared.

The blood pressure was measured using the auscultatory method according to the MNS6386:2013 standard. With the patient in a seated position, the cuff was placed around the arm, and the person performing the measurement placed the bell of their stethoscope over the brachial artery, medial to the antecubital fossa, the just below the cuff's edge and rapidly inflated the cuff with a pump until the circulation was occluded. The cuff was then gradually deflated using a small valve as the person taking the measurement listened for the sound of blood pulsing through the brachial artery. The knocking sound of rushing blood heard upon deflating the cuff referred to the systolic blood pressure, while the pressure at which the sound disappeared indicated the diastolic pressure. The blood pressure was measured in millimeters of mercury (mmHg) and recorded.

In the second part of the study, each subject completed a two-part questionnaire. The first part was composed of questions related to their socioeconomic background, including age, marital status, parity, education, occupation, menstruation history, hypertension, and a history of ischemic heart diseases. The second part consisted of the MENQOL questionnaire, which included 29 items in four domains: vasomotor (3 items), psychosocial (7 items), physical (16 items) and sexual (3 items). The respondents were asked to rate their experience of each item within the past month, and to score the bothersomeness of

each symptom on a Likert scale ranging from 0 (not bothered at all) to 4 (extremely bothered). All the symptom scores were then grouped into three groups: absent, slight and moderate/severe.

Statistical analysis

Data were analyzed using SPSS version 22. Besides producing general characteristics statistics, the comparisons between MENQOL domains and android/gynoid groups, and BMI groups were performed using Pearson's Chi-square test. All tests were two-sided, and p-values < 0.05 were considered statistically significant. Logistic regression analysis was conducted to explore cardiovascular disease risk factors (hypertension and ischemic heart disease).

Ethical statement

The study was approved by the Research Ethics Committee of the Mongolian NationalUniversity of Medical Sciences) (№2016/10/26-05). All patients provided written informed consent before participating in the study.

Results

Menopausal status results

We examined a total of 1084 women in the study. The mean age of participants was 49.4 years, 53.4 % were perimenopausal, and 46.6 % were postmenopausal (Table 1).

Table 1. Key characteristics of the respondents

	Age
Age (years)	49.39 ± 6.75
Body mass index	
Normal	352 (32.9%)
Overweight	411 (38.4%)
Obese	308 (28.8%)
Waist-hip ratio	
Android	621 (84.4%)
Gynoid	115 (15.6%)
Menopausal status	
Perimenopause	579 (53.4%)
Postmenopause	505 (46.6%)

Data reported as mean ± standard deviation, or n (%)

The prevalence of overweight and obese women was 67.2 %. According to the body fat distribution patterns, 84.4 % were android, and 15.6 % were gynoid (Table 1). When menopausal symptoms were distributed over menopausal status, vasomotor ($p < 0.001$) and sexual ($p < 0.009$) domains had a significant association with menopausal statuses (Table 2).

Table 2. Distribution of menopausal domains by menopausal status

Domain	Peri-early	Peri-late	Post-early	Post-late	Total	P-value
Vasomotor						
Absence	35.1%	21.0%	18.4%	25.5%	100.0%	0.001*
Slight	27.4%	27.4%	25.4%	19.9%	100.0%	
Moderate/Severe	17.0%	30.7%	30.7%	21.6%	100.0%	
Psychological						
Absence	28.1%	23.1%	25.6%	23.1%	100.0%	0.447
Slight	28.0%	25.1%	22.4%	24.5%	100.0%	
Moderate/Severe	32.4%	27.7%	23.1%	16.8%	100.0%	
Physical						
Absence	24.0%	36.0%	8.0%	32.0%	100.0%	0.292
Slight	29.3%	24.0%	23.0%	23.7%	100.0%	
Moderate/Severe	28.7%	26.6%	25.2%	19.6%	100.0%	

Sexual						
Absence	28.1%	25.3%	20.2%	26.3%	100.0%	0.009*
Slight	33.6%	23.8%	26.6%	16.0%	100.0%	
Moderate/Severe	22.4%	27.2%	28.8%	21.6%	100.0%	

*Statistically significant difference using Pearson's Chi-square test

Findings related to BMI

There was a statistically significant relationship between the body fat pattern and menopausal status (Table 3). When it came to the relationship between BMI group and menopause symptom domain in each menopause status, there are only two instances where a significant correlation was found, and all the others were not significant.

Table 3. BMI group by menopause stage

		BMI group			
		Normal	Overweight	Obese	P value
Menopause status	Perimenopause	34.4%	34.6%	30.9%	0.021*
	Postmenopause	29.8%	43.2%	27.0%	

*Statistically significant difference using Pearson's Chi-square test

In particular, in perimenopause status, there is a statistically significant correlation between BMI status and psychological symptoms ($p < 0.05$). Similarly, BMI status is associated with sexual symptoms at a statistically significant level in perimenopause status (Table 4).

Table 4. Menopausal symptom domains and BMI groups

Menopausal status	Symptom domain	Symptom severity				
			Normal	Overweight	Obese	P-value
Perimenopausal	Vasomotor	Absent	38.8	33.5	27.7	0.320
		Slight	30.6	35.6	33.9	
		Moderate/severe	33.3	29.0	37.7	
Postmenopausal		Absent	27.7	44.5	27.7	0.992
		Slight	28.7	45.3	26.0	
		Moderate/severe	26.0	46.6	27.4	
Perimenopausal	Psychological	Absent	30.9	33.0	36.1	0.048*
		Slight	39.0	34.7	26.3	
		Moderate/severe	27.3	31.3	41.4	
Postmenopausal		Absent	22.6	47.3	30.1	0.555
		Slight	30.3	45.4	24.3	
		Moderate/severe	21.7	45.8	32.5	
Perimenopausal	Physical	Absent	53.3	20.0	26.7	0.336
		Slight	34.2	36.0	29.8	
		Moderate/severe	33.8	30.4	35.8	
Postmenopausal		Absent	20.0	70.0	10.0	0.135
		Slight	31.0	44.0	25.0	
		Moderate/severe	21.7	45.8	32.5	
Perimenopausal	Sexual	Absent	36.5	31.0	32.5	0.041*
		Slight	32.4	42.4	25.2	

	Moderate/severe	32.8	24.6	42.6	
Postmenopausal	Absent	29.9	41.2	29.0	0.164
	Slight	27.3	53.5	19.2	
	Moderate/severe	22.0	45.8	32.2	

* Perimenopausal with high BMI women experienced significantly worse psychological and sexual dysfunction compared to women with lower BMI ($p<0.05$, Pearson's Chi-square test).

Findings related to body fat distribution with waist-hip ratio (WHR)

There was a statistically significant relationship between body fat pattern and menopausal status (Table 5). However, there was no statistically significant relationship between WHR and menopause symptom domain in both perimenopause and postmenopausal status (Table 6).

Table 5. Waist-to-hip-ratio (WHR) by menopause status

Menopause status	WHR		P-value
	Android	Gynoid	
Perimenopause	81.6%	18.4%	0.025*
Postmenopause	87.8%	12.2%	

* Statistically significant difference using Pearson's Chi-square test

Analysis of risk factors for cardiovascular disease

Cardiovascular disease is the main cause of mortality in Mongolian women, and thus, it is of critical interest among researchers examining the risk factors. We ran two models (Table 7) to determine the statistically significant risk factors for cardiovascular disease. The first model included key health factors, demographic, socioeconomic, reproductive health and other health-related variables. Most factors, including the menopausal stage, were not statistically significant. So, we ran the second model, excluding non-significant variables from the model. And the result of the binary logistic regression shows that odds for having cardiovascular disease among overweight and obese women are 2.1 ($p < 0.001$) and 3.2 ($p < 0.001$) times the odds for normal-weight women having the disease controlling for other variables.

Moreover, women in the postmenopausal status were 1.6 times more likely to have cardiovascular disease than women in the premenopausal state ($p<0.01$). Those women who have stage 1 hypertension are 2.9 times more likely to have cardiovascular disease than women with normal blood pressure controlling for other variables ($p<0.001$).

Table 6. Menopausal symptom domains and waist-to-hip-ratio category

Menopausal status	Symptom domain	Symptom severity			
			Android	Gynoid	P-value*
Perimenopausal	Vasomotor	Absent	81.3%	18.7%	0.897
		Slight	79.4%	20.6%	
		Moderate/severe	81.8%	18.2%	
Postmenopausal		Absent	86.8%	13.2%	0.980
		Slight	87.7%	12.3%	
		Moderate/severe	87.3%	12.7%	
Perimenopausal	Psychological	Absent	91.4%	8.6%	0.061
		Slight	77.3%	22.7%	
		Moderate/severe	80.5%	19.5%	
Postmenopausal		Absent	88.7%	11.3%	0.465
		Slight	88.4%	11.6%	
		Moderate/severe	82.0%	18.0%	
Perimenopausal	Physical	Absent	80.0%	20.0%	0.294
		Slight	77.9%	22.1%	

		Moderate/severe	85.2%	14.8%	
Postmenopausal		Absent	100.0%	0.0%	0.622
		Slight	86.6%	13.4%	
		Moderate/severe	87.6%	12.4%	
PerimenopausaL	Sexual	Absent	78.2%	21.8%	0.469
		Slight	83.7%	16.3%	
		Moderate/severe	83.7%	16.3%	
Postmenopausal		Absent	88.2%	11.8%	0.247
		Slight	82.7%	17.3%	
		Moderate/severe	92.9%	7.1%	

Table 7. Results of binary logistic regression for cardiovascular disease by risk factors

Variables		**Model 1**			**Model 2**	
Key health indicators	OR	95% CI		OR	95% CI	
BMI						
Normal	1			1		
Overweight	2.134**	1.24	3.65	2.16***	1.46	3.18
Obese	3.501***	1.97	6.20	3.26***	2.16	4.91
Waist-hip ratio						
Gynoid	1					
Android	0.82	0.47	1.45	1.00	0.64	1.57
Blood pressure group						
Normal	1			1		
Prehypertension	1.38	0.88	2.15	1.28	0.90	1.80
Stage 1	4.05***	2.14	7.63	2.96***	1.81	4.83
Stage 2	4.82**	1.87	12.4	3.38**	1.59	7.20
Menopause stage						
Peri	1			1		
Post	1.39	0.85	2.28	1.63**	1.20	2.23
Demographic variables	OR	95% CI		OR	95% CI	
Age group						
41-45	1					
46-50	0.80	0.43	1.48			
51-55	1.01	0.54	1.88			
55+	0.62	0.27	1.43			
Marital status						
No	1					
Yes	1.06	0.65	1.72			
Location						
Urban	1					
Rural	1.10	0.72	1.67			
Socio-economic variables	OR	95% CI		OR	95% CI	
Education						
Primary or less	1					
Complete secondary	1.44	0.76	2.72			

TVET	1.39	0.70	2.72		
Tertiary	1.56	0.81	3.02		
Income /MNT/					
Up to 300,000	1				
301,000-500,000	0.51	0.27	0.95		
501,000-750,000	0.56	0.31	1.01		
751,000+	0.69	0.34	1.38		
Dwelling type					
Ger /yurt	1				
Detached house	0.97	0.57	1.65		
Apartment	1.15	0.63	2.10		
Reproductive health	OR	95% CI		OR	95% CI
Number of children					
0-1	1				
2	1.13	0.54	2.38		
3	1.90	0.88	4.11		
4<	1.70	0.78	3.73		
Surgery					
No	1				
Uni/bi ovary removal	0.96	0.50	1.84		
Removal of uterus	1.21	0.53	2.76		
Others	0.92	0.50	1.68		
Other health indicators	OR	95% CI		OR	95% CI
Bodyweight last five years					
Increased	1				
Lowered	0.63	0.32	1.24		
No change	0.91	0.55	1.51		
Taste preference					
Flour	1				
Fatty milk and meat	0.93	0.57	1.52		
Salty	0.75	0.32	1.72		
Sweet	0.77	0.43	1.37		
Less appetite	1.85	0.92	3.74		
No change	0.32	0.08	1.27		
Smoking					
No	1				
Yes	0.62	0.25	1.51		
Alcohol drinking					
No	1				
Yes	0.72	0.47	1.09		
Log likelihood	-325.51			-473.26	

*p<0.05; **p<0.01; ***p<0.001
The first variable for each categorical variable was used as the reference value

Discussion

The study results showed that vasomotor and sexual symptoms increased by menopausal status, consistent with the results of other authors [27]. We also found that psychological and sexual domains in perimenopause status had a statistically significant relationship with BMI groups ($p < 0.05$). However, the body fat distribution pattern did not correlate with menopausal domains in any of the menopause statuses. This result was consistent with researchers from Iran, who did not find any difference in the quality of life between women with android and gynoid body patterns [23]. In some studies, the android fat distribution is a significant risk factor for problems in the vasomotor and psychosocial domains and lower quality of life (Spain [28] and Thailand [29]). This inconsistency might be explained by most Iranian study participants having an android pattern, which could be the case for our Mongolian study in which 84.4% were android, and 15.6 were gynoid. Most previous studies have found that postmenopausal women who were overweight and were obese have a lower quality of life in vasomotor, physical and psychosocial domains [22, 28, 30]. Our findings also supported this trend, especially in psychosocial and sexual domains.

Looking further into sexuality, its complexity and multifactorial characteristics are related to hormones, psychosocial well-being, menopausal symptoms, and partnership dynamics [31]. During the natural menopausal transition, female sexual function declines with decreases in sex hormones. In the previous investigation, BMI > 30kg/m^2 was associated with a higher sexual dysfunction, especially arousal, orgasm, satisfaction, and lubrication, but pain and desire were not correlated with higher BMI [32].

Our study showed that the menopausal status correlated with the sexual domain as well as the BMI group. Further research is needed to investigate which sexual function is impaired due to these factors.

Some studies have shown that estrogen controls the hypothalamic control of obesity. Estrogen receptor alpha in the brain regulates body weight in both males and females. Estradiol availability affects the regulation of enzymes involved in tricarboxylic acid cycle activity. Estradiol enhances the glycolytic/pyruvate/acetyl-CoA pathway to generate electrons required for oxidative phosphorylation and ATP generation to sustain glucose utilization as the primary fuel source [33]. Some evidence, estrogen receptor-specific, hormonal therapies can and should be used to optimize women's health as they transition through menopause while reducing the undesired complications that have limited the efficacy and use of traditional hormone replacement interventions [34].

With increased life expectancy, women are spending more time in the postmenopausal stage. Cardiovascular disease (CVD) remains the leading cause of mortality in women of Mongolia for the last two decades [35]. Moreover, central distribution and accumulation of adipose tissue, and the concomitant insulin-resistant dyslipidemic state, have emerged as critical components of a cluster of metabolic abnormalities strongly related to coronary heart disease [36-38]. Menopausal women are three times more likely to develop obesity and metabolic syndrome abnormalities that premenopausal women [39]. Consistently, estrogen loss in women leads to a cluster of cardiometabolic abnormalities that greatly increase the risk of diseases, including CVD, type 2 diabetes, osteoporosis and certain forms of cancer [34,40].

Hormone replacement therapy (HRT) is sometimes highly effective for preventing the cardiometabolic consequences from estrogen loss, but in some cases, it has also been associated with adverse cardiometabolic effects [41].

Thus, the International Menopause Society has recommended starting HRT close to the menopause transition, not in the late postmenopausal stage [42]. Our study has shown that postmenopausal women with overweight or obesity have a higher risk of cardiometabolic disease, which is consistent with the other studies.

There are few studies specific to Mongolian women on the prevalence of menopause-related issues, especially the prevalence of menopause symptoms and health risks [25]. Our study's strength was that we found a significant association of BMI with the prevalence of menopause symptoms that increases with menopause stages. To do so, we recruited participants from a pool of women attending their general health check-ups, rather than women with gynecological problems. However, our study has some limitations. The cross-sectional design did not allow the identification of causes and consequences, but rather associations. Therefore, in our questionnaire-based study, the symptoms evaluated could not be standardized interpersonally, because they depended mostly on individual perception, although the Likert scale was used to minimize interpersonal

differences. Moreover, this study was to find the prevalence of menopause symptoms specific to Mongolian women. The prevalence of psychological symptoms and sexual dysfunction should be investigated further to develop effective healthcare services for menopausal women. Moreover, our results show the need for further investigation for the prediction of menopausal age among Mongolian women with the prevalence of obesity and CVD risk.

Furthermore, health care professionals may have to consider early assessment and timely commencement of HRT. The quality of life in menopausal women is a subject worthy of focused attention, which can result in individualized healthcare approaches to promote healthier aging for women in Mongolia.

Conclusions

Overweight and obese perimenopausal women have a lower quality of life in the psychosocial and sexual domains. An android-type fat distribution was prevalent and was mostly found in the menopause transition. More clinical studies on sexual dysfunction and individualized management of menopause for women with co-existing chronic conditions are needed. Obesity was the most significant risk factor for cardiovascular disease in postmenopausal women. Maintaining a premenopausal body habitus and weight might mitigate some of the menopause-specific declines in quality of life. A multidisciplinary approach to healthcare planning and individualized preventive strategies of cardiovascular diseases should commence long before the onset of menopause to be impactful.

Conflict of Interest

The authors have no conflict of interest.

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