

An analysis of the main reasons that perimenopausal and postmenopausal women in China have for seeking outpatient treatment and factors influencing their symptoms: a single-center survey

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Summary

Objective: To explore the main reasons that perimenopausal and postmenopausal women have for seeking treatment and factors influencing their symptoms in order to provide (peri-) menopausal women with better healthcare treatments. **Materials and Methods:** Interviews were conducted with 357 (peri-) menopausal women who sought outpatient treatment at The Sixth People's Hospital, Shanghai Jiaotong University from July 1, 2010 to March 31, 2012. The survey includes general questions and an evaluation of (peri-) menopausal symptoms using the modified Kupperman index score. **Results:** The average age of the women who took part in the study was 51.47 years old (standard deviation = 5.18). Of the women, 47.6% were perimenopausal, 34.7% were early postmenopausal, and 17.7% were late postmenopausal. The age of natural menopause was between 39 and 56 years, and the average natural menopause age was 49.3 years (standard deviation = 4.0). The incidence of (peri-) menopausal symptoms was 91%. Age, education level, and chronic diseases were associated with menopausal symptoms. The main reasons for seeking treatment were hot flushes, insomnia, bone and joint pains, mood swings, and palpitations. **Conclusions:** The main reasons for Chinese (peri-) menopausal women seeking treatment were hot flushes, insomnia, bone and joint pains, mood swings, and palpitations; age, education level, and chronic diseases are the main factors that influencing the (peri-) menopausal symptoms.

Key words: Peri-menopause; Perimenopausal symptoms; Epidemiological factors; Cross-sectional study.

Introduction

Perimenopause is a special period in a middle-aged woman's life indicating the end of the fertile stage in her reproductive life cycle as her ovaries decline. These women will experience a range of menopause-related symptoms, including menstrual irregularity, hot flushes, night sweats, and bone and joint pains. Additionally, these symptoms may increase incidences of insomnia, depression, hypertension, diabetes, and urinary incontinence, which may adversely affect the quality of life of perimenopausal and postmenopausal women [1, 2]. The occurrence of perimenopausal syndromes differ between regions; occurrence rates are at 70% for women in Iran [3] and 85.8% for women in Sydney [4]. Main symptoms also vary between women. According to an insomnia research targeted at women over 40 years of age in Brazil, the incidence rate of insomnia was found to be 38.5% [2]. Other researches showed that the incidence rate of insomnia in perimenopausal and postmenopausal women was 50.8% [5]. Researches in America and Australia revealed that some of the reasons that (peri-) menopausal women had for seeking treatment were hot flushes, bone and joint pains, menstrual disorder, weight gain, insomnia, and ir-

ritability [6, 7]; while researches conducted in Japan showed that the main reasons were hot flushes, fatigue, and bone and joint pains [8]. The study of factors that could influence symptoms in (peri-) menopausal women is fairly common outside of China. Some of these factors, which can increase the occurrence of (peri-) menopausal symptoms, include age, education level, income, marital status, chronic disease, body mass index (BMI), and alcohol consumption [1, 4, 9-11]. China has a large population, with an estimated 120 million postmenopausal women. Due to the traditional notion that menopausal symptoms are natural occurrences that need no special care or treatments, very few women have sought treatment. As a result, there is a lack of research in China regarding reasons that (peri-) menopausal women had for seeking treatment and factors influencing symptoms in China.

Therefore, the purpose of this study was to investigate symptoms related to perimenopause and postmenopause based on women who sought treatment for menopausal symptoms in Shanghai city. By discovering the main reasons for seeking treatment and the factors that influence menopausal symptoms, information on improving the quality of life for (peri-) menopausal women can be provided.

Materials and Methods

Subjects

(Peri-) menopausal women who visited the Sixth People's Hospital of Shanghai, Jiaotong University between July 1st 2010 to March 31st 2012 were selected based on the following criteria: (i) aged between 40 to 65 years; (ii) first-time visitors for menopause-related symptoms; (iii) those without a (peri-) menopausal-related treatment history; (iv) those who had not undergone a uterus hysterectomy or a bilateral oophorectomy; (v) those who had received primary education or higher. Patients were categorized as being either perimenopausal or postmenopausal based on their menopausal status. Premenopause is a period of one to five years prior to menopause whereas menopause refers to the period after menstruation has ceased for a year. The perimenopause stage includes those who presented with menopause-related endocrinological, biological and clinical symptoms, and those who reached menopause less than a year ago, while the postmenopause stage includes those who have ceased menstruation naturally for more than five years. This study was approved by the ethics committee from the Sixth People's Hospital of Shanghai and participants had also given their informed consent.

Methods

Interviews were conducted in this cross-sectional study. Newly diagnosed patients were asked the following questions: (i) general questions, including: age, occupation, education level, income level, height, weight, menstrual history, reproductive history, menopausal history, medical history, alcohol consumption level, smoking history, attitude towards menopause, and self-assessment; (ii) evaluation of (peri-) menopausal symptoms (this section, which comprised of 13 parts, was conducted using a modified version of the Kupperman index score [12]): hot flushes, paresthesia, insomnia, nervousness, melancholia, vertigo, weakness, bone and joint pains, headaches, palpitations, formication, sexual problems, and urinary tract infections (UTI). Each symptom was assessed based on a basic score and an extent score that was rated on a scale of 0-3 points. The severity of each symptom was calculated by multiplying the basic score with the extent score. The total score was the sum of the score of each symptom. The modified version of the Kupperman index was used to evaluate and describe the severity of each symptom as follows: a total score of less than or equal to 6 was considered normal, a score of between 7-15 was mild, a score of between 16-30 was considered moderate, and a score of more than 30 was considered severe. The body mass index (BMI) was calculated by dividing body mass (kg) by the square of height (m). According to WHO guidelines, a BMI of less than 18.5 is considered underweight, a BMI of between 18.5 to 24.9 is considered normal, a BMI of between 25 to 29.9 is considered overweight, and a BMI of 30 and above is considered obese [13]. Those who had problems like hypertension, diabetes, and coronary heart disease were deemed to suffer from chronic diseases.

Statistical Analysis

The results were analysed using the SPSS 18.0 software. The enumeration data was expressed as actual frequency and percentage, while the measurement data was expressed as $\pm$ SD. The descriptive statistics were used for the demographic characteristics and independent variables of the samples, and were interpreted through an analysis of the variance (ANOVA), student's t-test, Chi-square test, and the correlation and multiple stepwise regression analysis. *P*-values less than 0.05 were considered statistically significant.

Table 1. — *The major demographic characteristics of selected subjects.*

Content	Range	Number of cases (persons)	Percentage (%)
Age (years)	40-44	30	8.4
	45-49	92	25.8
	50-54	140	39.2
	55-65	95	26.6
Menopausal status	Perimenopause	170	47.6
	Premenopause	124	34.7
	Postmenopause	63	17.7
BMI	< 18.5	15	4.2
	(18.5 - 24.9)	281	78.7
	(25 - 29.9)	50	14.0
	≥ 30	11	3.1
Marital status	Married	352	98.6
	Divorced and separated	4	1.1
	Single	1	0.3
Education level	Elementary school	13	3.6
	Junior high school	68	19.0
	High School (including technical secondary school)	154	43.2
	College and above	122	34.2
Occupation	Worker	88	24.7
	Farmer	5	1.4
	Government officer and technician	212	59.4
	Self-employed and freelancer	43	12.0
	Unemployed	9	2.5
Reproductive history	0	36	10.1
	1	287	80.4
	≥ 2	34	9.5
Income level	$\leq 1,000$ CNY	16	4.5
	1,001-3,000 CNY	191	53.5
	3,001-5,000 CNY	95	26.6
	5,001-10,000 CNY	38	10.6
	> 10,000 CNY	17	4.8
Chronic disease	Yes	55	15.4
	No	302	84.6

Results

Major demographic characteristics of research subjects

A total number of 357 women fit the requirements and were entered into this study. The mean age was 51.47 ± 5.18 years, with a total of 170 perimenopausal women (47.6%), 124 premenopausal women (34.7%), and 63 postmenopausal women (17.7%). The age of natural menopause was between 39 to 56 years, with a mean age of 49.33 ± 4.0 years. The major demographic characteristics are shown in Table 1.

Incidence of (peri-) menopausal syndrome and score comparison between women with different menopausal statuses

Based on the modified Kupperman index score, there were a total of 32 cases that had a score of 6 or less and a

Table 2. — The incidence rate of (peri-) menopausal syndrome in women of different age groups.

Age group (years)	Number of cases	≤ 6 points	7 - 15 points	16 - 30 points	> 30 points	Incidence rate (%)
40-44	30	6	6	12	6	80
45-49	92	11	24	49	8	88.1
50-54	140	7	18	81	34	95
55-69	95	8	13	48	26	91.6
Total	357	32	61	190	74	91

$p = 0.039$, by Chi-square test.

total of 325 cases that had a score of more than 6, which set the incidence rate of (peri-) menopausal syndrome at 91%. The incidence of (peri-) menopausal syndromes reported in each age group was different ($\chi^2 = 7.964$, $p = 0.039$). As shown in Table 2, the 50-54 years age group had the highest incidence, and the differences were statistically significant ($p < 0.05$). A comparative analysis of the Kupperman index scores of the three groups showed a statistical difference ($F = 3.781$, $p = 0.024$). Table 3 shows that the Kupperman index scores of the premenopausal and postmenopausal groups were significantly higher than the (peri-) menopausal group ($p = 0.026$, $p = 0.024$), whereas the comparison between the premenopausal and postmenopausal groups showed no significant difference ($p = 0.754$).

Table 4. — Main reasons for seeking treatment in (peri-) menopausal women.

Symptoms	Patients	Percentage (%)
Hot flushes	135	37.8
Paresthesia	14	3.9
Insomnia	127	35.6
Nervousness	78	21.8
Melancholia	31	8.7
Vertigo	36	10.1
Weakness	65	18.2
Bone and joint pains	96	26.9
Headache	35	9.8
Palpitations	73	20.4
Formication	9	2.5
Sexual problems	23	6.4
Urinary tract infections	21	5.9

Main (peri-) menopausal reasons for seeking treatment

The main (peri-) menopausal reasons for seeking treatment are reflected in Table 4. The top five reasons were: hot flushes (37.8%), insomnia (35.6%), bone and joint pains (26.9%), mood swings (21.8%), and palpitations (20.4%).

Frequency of (peri-) menopausal symptoms

As illustrated in Tables 5 and 6, the five most common symptoms reported by the 357 (peri-) menopausal women

Table 3. — Kupperman index score of women with different menopausal status.

Groups	n	Kupperman index score	Normal (≤ 6 points)	Irregular (> 6 points) n (%)			
				Mild	Moderate	Severe	Subtotal
Perimenopause	170	20.82±10.584	20 (11.8)	34 (20)	89 (52.4)	27 (15.9)	150 (88.2)
Premenopause	124	23.51±10.068*	7 (5.6)	20 (16.1)	65 (52.4)	32 (25.8)	117 (94.4)
Postmenopause	63	24.11±9.754*	5 (7.9)	7 (11.1)	36 (57.1)	15 (23.8)	58 (92.1)
Total	357	22.33±10.34	32 (9)	61 (17.1)	190 (53.2)	74 (20.7)	325 (91)

* $p < 0.05$ vs perimenopause group by one-way analysis of variance (ANOVA) and Student-Newman-Kuels (SNK) paired comparison test.

Table 5. — The number of cases and incidence rate of (peri-) menopausal symptoms in different age groups [n (%)].

Symptoms	40-44 (years) (n=30)	45-49 (years) (n=92)	50-54 (years) (n=140)	55-65 (years) (n=95)	Total (n=357)	χ^2 -value	p-value
Hot flushes	20 (66.7)	63 (68.5)	106 (75.7)	75 (78.9)	264 (73.9)	3.714	0.294
Paresthesia	14 (46.7)	45 (48.9)	72 (51.4)	56 (58.9)	187 (52.4)	2.529	0.47
Insomnia	22 (73.3)	64 (69.6)	104 (74.3)	70 (73.7)	260 (72.8)	0.684	0.877
Nervousness	21 (70)	69 (75)	106 (75.7)	69 (72.6)	265 (74.2)	0.597	0.897
Melancholia	17 (56.7)	39 (42.4)	68 (48.6)	53 (55.8)	177 (49.6)	4.027	0.262
Vertigo	16 (53.3)	53 (57.6)	90 (64.3)	62 (65.3)	221 (61.9)	2.446	0.487
Weakness	25 (83.3)	76 (82.6)	120 (85.7)	85 (89.5)	306 (85.7)	1.96	0.586
Arthralgia or myalgia	19 (63.3)	61 (66.3)	106 (75.7)	72 (75.8)	258 (72.3)	4.245	0.236
Headache	18 (60)	51 (55.4)	77 (55)	58 (61.1)	204 (57.1)	1.065	0.786
Palpitations	20 (66.7)	62 (67.4)	113 (80.7)	73 (76.8)	268 (75.1)	6.573	0.087
Formication	8 (26.7)	18 (19.6)	45 (32.1)	33 (34.7)	104 (29.1)	6.227	0.101
Sex life	19 (63.3)	56 (60.9)	105 (75)	81 (85.3)	261 (73.1)	15.862	0.000*
Urinary infections	11 (36.7)	18 (19.6)	52 (37.1)	38 (40)	119 (33.3)	10.812	0.013*

*Incidence rates significantly different from different age groups by Chi-square test.

Table 6. — The number of cases and incidence rate of (peri-) menopausal symptoms in different menopausal status [*n* (%)].

Symptoms	Perimenopause (n=170)	Premenopause (n=124)	Postmenopause (n=63)	Total (n=357)	χ^2 -value	<i>p</i> -value
Hot flushes	117 (68.8)	96 (77.4)	51 (81)	264 (73.9)	4.697	0.095
Paresthesia	85 (50.0)	61 (49.2)	41 (65.1)	187 (52.4)	4.964	0.084
Insomnia	122 (71.8)	95 (76.6)	43 (68.3)	260 (72.8)	1.661	0.436
Nervousness	123 (72.4)	92 (74.2)	50 (79.4)	265 (74.2)	1.182	0.554
Melancholia	77 (45.3)	66 (53.2)	34 (54.0)	177 (49.6)	2.394	0.302
Vertigo	97 (57.1)	86 (69.4)	38 (60.3)	221 (61.9)	4.679	0.096
Weakness	141 (82.9)	108 (87.1)	57 (90.5)	306 (85.7)	2.428	0.297
Arthralgia or myalgia	114 (67.1)	94 (75.8)	50 (79.4)	258 (72.3)	4.660	0.097
Headache	95 (55.9)	69 (55.6)	40 (63.5)	204 (57.1)	1.261	0.532
Palpitations	125 (73.5)	90 (72.6)	53 (84.1)	268 (75.1)	3.388	0.184
Formication	43 (25.3)	39 (31.5)	22 (34.9)	104 (29.1)	2.559	0.278
Sex life	111 (65.3)	96 (77.4)	54 (85.7)	261 (73.1)	11.545	0.003*
Urinary infections	45 (26.5)	50 (40.3)	24 (38.1)	119 (33.3)	6.972	0.031*

*Incidence rates significantly different from menopausal status by Chi-square test.

were: fatigue (85.7%), palpitations (75.1%), mood swings (74.2%), hot flushes (73.9%), and sexual problems (73.1%). The Chi-square test showed that the incidence of sexual problems and UTIs varied with the different age groups and menopausal statuses. Sexual problems were most common in postmenopausal women between 55-65 years of age while UTIs occurred most frequently in premenopausal women between 55-65 years of age. The incidence of each symptom and the outpatient rate were analysed using the Chi-square test and the results were statistically significant. (The χ^2 values were: 94.535, 207.242, 99.803, 196.207, 144.607, 208.062, 325.885, 147.036, 179.631, 213.454, 94.884, 331.181, 85.332; all *p* values were less than 0.001).

Multiple regression and correlation analysis of influencing factors of (peri-) menopausal symptoms

A stepwise multiple regression analysis was conducted using the Kupperman index scores of the (peri-) menopausal symptoms as dependent variables while the age, menopausal status, BMI, marital status, education level, reproductive history, occupation, income level, smoking history, alcohol consumption level, and existing chronic medical conditions were independent variables. Results in Table 7 show that age, education level, and existing chronic medical conditions were related to (peri-) menopausal symptoms. Related analysis revealed that these variables had a positive correlation with menopausal symptoms and the differences were statistically significant ($r = 0.173$, $r = 0.169$, $r = 0.106$, *p* values were 0.001, 0.001, and 0.046, respectively).

Discussion

Incidence of (Peri-) menopausal syndromes

Results obtained from the 357 cases in this study showed that the incidence rate of (peri-) menopausal syndromes was 91%, while the highest occurrence was found in the 50-54 age group. Although there were no statistical differences in the Kupperman index scores between the pre-

Table 7. — Multiple stepwise regression analysis of factors affecting symptoms of (peri-) menopausal women.

Factors	B	S.D	t-value	95%CI
Age	0.295	0.109	2.701	(0.080 0.511)*
Menopausal status	-0.871	1.409	-0.618	(-3.643 1.901)
BMI	0.005	0.005	1.050	(-0.004 0.014)
Marital status	4.532	3.594	1.261	(-2.537 11.602)
Education degree	1.979	0.653	3.032	(0.695 3.262)*
Reproductive history	1.866	1.247	1.491	(-0.594 4.313)
Vocational status	-0.739	1.403	-0.526	(-3.498 2.021)
Economic status	-0.875	0.754	-1.161	(-2.358 0.607)
Smoking	1.432	1.021	1.203	(-0.331 2.112)
Alcohol consumption	1.596	1.304	1.421	(-0.403 3.516)
Chronic disease	3.373	1.636	2.061	(0.155 6.592)*

**p* < 0.05, by multiple stepwise regression analysis.

menopausal and postmenopausal women, the Kupperman index scores of the menopausal women were significantly higher than that of the perimenopausal women.

The present results showed that the rate of incidence in Shanghai city was slightly different from that of cities in other countries. For example, reports showed that the rate of incidence was 70% for Iranian women [3], 85.8% for Sydney women [4], and 90.9% for Latin American women [14]. This research was targeted at women who were seeking treatment for (peri-) menopausal symptoms, which explains the higher incidence rates of (peri-) menopausal syndromes compared to that of women who only sought treatment for healthcare reasons. Therefore, a general survey should be conducted with (peri-) menopausal women in order to provide better healthcare treatment for them. Some examples include the setting up of clinics specializing in the treatment of women suffering from (peri-) menopause, implementing health consultation programs, and allowing universal access to hormone replacement therapies, which is necessary for the prevention of disease, deferment of senescence, and enhancement of quality of life in (peri-) menopausal patients.

Furthermore, health advice can be provided in order for patients to develop a good lifestyle and eating habits. These measures would allow (peri-) menopausal women to heighten their own health awareness, understand how physiological changes can trigger various symptoms, and ultimately lead a stable and healthy life.

Characteristics of (peri-) menopausal symptoms

Based on the present research, the five most common (peri-) menopausal symptoms are: fatigue, palpitations, mood swings, hot flushes, and sexual problems. The rate of incidence of fatigue was at a high of 85.7%, which is consistent with Lu *et al.*'s [4] reported rate of 86% in (peri-) menopausal women in Sydney. Palpitations came in second with 75.1%, followed by mood swings at 74.2%, hot flushes at 73.9%, and finally, sexual problems at 73.1%. Results also showed that sexual problems and UTIs had the highest incidence rates for women between 55-65 years of age and this is in agreement with a previous report by Li *et al.*, which indicated a low frequency of sexual intercourse for postmenopausal women [15]. The high incidence rate of sexual problems and UTIs in these women is probably due to ageing, fall in hormone levels, atrophy of the vaginal mucosa, vaginal dryness, atrophy of the urethral mucosa, and a weak immune system. However, the five main reasons that women in this study had for seeking treatment were: hot flushes, insomnia, bone and joint pains, mood swings, and palpitation, which is in accord with research done by Waidyasekera *et al.* [9]. The present data indicated that the incidence rate of each symptom was not consistent with the reasons for seeking treatment. This could be attributed to the extent of influence that the symptoms had on their jobs and lives as well as their recognition of each symptom. Hot flush is known as one of the most common symptoms in (peri-) menopausal women. Gjelsvik *et al.* [16] reported that the incidence of hot flushes peaked at the age between 53-54 years and gradually declined thereafter. Vanessa *et al.* [2] found that depression can result in an increase in the occurrence of hot flushes by 1.48 times. Other research [14] showed that hot flushes had the highest incidence rates in postmenopausal women. It has also been reported that the CYP1B1 gene is able to increase the occurrence of hot flushes by lowering the serum estrogen concentration [17].

Insomnia, which is the second reason for seeking treatment, refers to the inability to fall asleep or remain asleep (easily woken, waking early, or inability to fall asleep after waking up). It results in a decrease in sleep time and quality, an inability to fulfill an individual's physiological needs, and an inability to function properly throughout the day. The incidence rate of insomnia in (peri-) menopausal women in this study was 72.8%, while a recent study in Mexico revealed that the incidence rate in (peri-) menopausal women was 53.3% and that insomnia and quality of life are closely related [18]. The correlation between

insomnia and decline in estrogen levels have been reported, and Arakane *et al.* [19] observed a positive correlation between insomnia and severity of hot flushes, although the exact reasons are, as yet, unclear.

Bone and joint pains are the third most common reason for seeking treatment in (peri-) menopausal women. Previous studies showed that 73.3% - 74.4% of patients sought treatment for bone and joint pains [9, 20]. Moreover, studies have shown that the development of bone and joint symptoms are a precursor to menopause [10, 20]. The occurrence of osteoporosis increases with an extension of the menopausal period and increase in bone loss. However, there have been no reports on the correlation between bone pains and osteoporosis.

The fourth and fifth most common reasons for (peri-) menopausal women to seek treatment are mood swings and palpitations, respectively. Earlier studies have shown that mood swings could be a result of a decline in endogenous opioids like β -endorphin, which may cause a loss of balance of the neural transmitter that is between the angiotensin and γ -aminobutyric acid. This imbalance can result in problems like fatigue, irritability, and emotional instability [6]. Palpitations are a symptom of autonomic nerve disorders and a research conducted on animals in Japan revealed a positive correlation between fat intake and frequency of palpitations [8].

Factors relevant to (peri-) menopausal symptoms

(Peri-) menopausal symptoms are affected by several factors. The present study indicated that (peri-) menopausal symptoms have a positive correlation with age, education level, and chronic diseases, which is supported by research done by Karaçam an Seker [1]. However, Li *et al.*'s report suggested that a low education level actually increased the severity of the symptoms [15]. Those who are highly educated regard menstruation as a symbol of youth, while menopause is seen as a sign of old age and a loss of ability to reproduce. In contrast, those with a low education level think that menopause allows them to break away from menstrual pains and the use of contraceptive methods, which would make life more convenient for them. The different notions affect how (peri-) menopausal women adapt psychologically to the physiological changes, as well as their autonomic activity, which would in turn influence the incidence and the severity of their (peri-) menopausal syndromes. Similar studies have shown that chronic diseases are an independent risk factor for the incidence of perimenopausal symptoms in Sri Lankan women [9]; age can increase the incidence rate of somatic symptoms in perimenopausal women in Oman [20]; and a high education level can increase the occurrence of perimenopausal symptoms in Libyan women [21]. The present study showed that BMI was unrelated to the occurrence of symptoms, which is consistent with Guthrie *et al.*'s report on Australian women [22]. However, Moilanen *et al.* [10] indicated that

women with a high BMI were more likely to experience psychological and cardiovascular symptoms and others [8, 23, 24] have shown that overweight women are more likely to suffer from hectic fever. Further investigation using a large sample size is needed for a better understanding of how these factors affect (peri-) menopausal symptoms.

Conclusion

The average age of natural menopause of the 357 women who were entered in this study was 51.47 and 49.3 years, respectively. The results of this study showed that the incidence of (peri-) menopausal syndrome was relatively high. The main reasons for Chinese (peri-) menopausal women seeking treatment were hot flushes, insomnia, bone and joint pains, mood swings, and palpitations, while main factors that influenced their symptoms were age, education level, and chronic diseases. The information provided in this study could be useful for clinicians on improving the quality of life of (peri-) menopausal women.

This study was conducted on (peri-) menopausal women who sought treatment in hospitals, which accounts for the higher occurrence of (peri-) menopausal syndromes than normal. In addition, the sample size was relatively small, and future research using large sample sizes in different areas and on different people has to be conducted in order to provide personalized treatment programs for (peri-) menopausal women, which would enable them to improve their quality of life.

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