

# Developing an Instrument to Measure Climacteric Symptoms among Korean and Japanese Women

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**Purpose.** The purpose of this study was to construct a measurement instrument for climacteric symptoms among Korean and Japanese women.

**Methods.** From Dec. 1<sup>st</sup> of 2003 to March 30<sup>th</sup> of 2004, in-depth interviews were made with 26 women (15 in Jinju, Korea and 11 in Nagasaki, Japan) aged from 45 to 59 years who had not taken hormone replacement therapy to relieve the climacteric symptoms. A draft questionnaire with 45 items was constructed on the basis of the interview data and literature review. Three obstetricians, three PhDs in nursing science, and a chief nurse who was exclusively in charge of the climacteric management, examined the draft questionnaire to evaluate content validity. After deletions 39 items remained for a preliminary questionnaire. A survey was conducted by using a convenient sampling method in Jinju of Korea and Nagasaki of Japan during the period from April 1<sup>st</sup>, 2004 to July 10<sup>th</sup>, 2005.

**Results.** Factor analysis identified 4 factors, which were “mental and psychological symptoms”, “physical symptoms”, “loss of autonomic nervous system symptoms”, “sexual symptoms”. These four factors explained 46.9% of total variance.

**Conclusions.** The results demonstrated that climacteric symptom scale was multidimensional, and the reliability and validity of the scale was supported.

**Key Words :** Climacteric symptom, Factor analysis

## INTRODUCTION

### *State of the problem*

“Climacteric” is the transitional period from the productive to non-productive phase in the aging process.

The climacteric symptoms include the following : hot flushes, sweating in the night time, insomnia, anxiety, hypersensitivity, memory disturbance, loss of concentration, loss of confidence, atrophy of reproductive system, pain during sex, urinary problem symptoms, loss of sexual desire, atrophy of skin, arthralgia, uterus prolapse

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and urinary incontinence and so on (Han, Park, Kim, & Cho, 1998; Korean Society of Menopause, 1994; Korean Society of Menopause, 2000). In addition to the above physical symptoms, climacteric women experience a role loss in the family after the marriage of their children, and stress due to the sickness and death of parents, relatives and friends. Climacteric is also a period of crisis in which women experience various types of role ambiguity, role loss, crisis feeling, internal conflicts, and negative self-concept (Lee et al., 1998). So, climacteric women experience various physical, mental and psychological stresses. If they don't maintain their health appropriately in this period, it will threaten the quality of their life in the future. Therefore, the definitive measurement of climacteric symptoms becomes one of the very important research tasks.

In surveys of Korean women (Back, 1998; Ju et al., 2005; Korean Society of Menopause, 2000; Lee & Chang, 1992; Rhee, Shin, Chung, Shin, & Kim, 2001; Song, 2001), it was found that Korean climacteric women had the following main symptoms; 'I am tired and in low spirits', 'I have pains in the wrist', 'I feel sharp pains and are numb in the arms and legs', and 'I have short memory retention'. Also Japanese climacteric women had reported the symptoms (Igarashi et al., 2000; Kudo et al., 2005; Nishibayashi, 2004; Shima, 2004), 'I feel a stitch in the neck and shoulder', 'I have a pain in the hands and feet', 'My eyes feel tired', 'I feel tired easily', 'I have a headache', and 'I am forgetful'. So, we found that the climacteric symptoms for both Korean and Japanese women are very similar. For Korean climacteric women, mental symptoms were, sometimes, expressed as a physical symptoms and the relationship with husband affected the climacteric symptoms. Often, because of the Confucian life style, when a sexual problem occurred during climacteric, the situation was not improved but caused conflict, because of insufficient communication with her husband (Song, 1997). According to the Japanese survey utilizing in-depth interviews (Satoh, Takenoue, & Horiguchi, 2004), Japanese climacteric women thought as follows; 'Husbands aren't aware of menopause and they are not even concerned over it', 'Even though women work outside like men, husbands think that women must do all the house work', 'Women work twice as much as men', and 'Climacteric difficulties are not recognized as medical problems, but are treated as exaggerations or mental disturbances'. Therefore, Japanese climacteric women had

not only mental and physical pains, but also social pains. From these findings, it turned out that Japanese and Korean women live in a very similar socio-cultural environment.

Therefore, we Korean and Japanese authors, thought that there were many things in common for Korean and Japanese climacteric women, and made a decision to develop a measurement for climacteric symptoms to be used for both Korean and Japanese climacteric women. In collaboration with partners in the two countries, we reviewed literature (Back, 1998; Charles & Hammond, 1997; Douglas & Jeffery, 2000; Han et al., 1998; Holte & Mikkelsen, 1991; Janette & Perz, 1997; Ju et al., 2005; Korean Society of Menopause, 1994; Korean Society of Menopause, 2000; Kudo et al., 2005; Lee et al., 1998; Lee, Chang, & Yoo, 2003; Mayer & Linscott, 1995; Metka, Enzelsberger, Knogler, Schurz, & Aichmair, 1991; Nishibayashi, 2004; Park, Lee, & Cho, 2002; Perz, 1997; Rhee et al., 2001; Satoh et al., 2004; Shima, 2004; Song & Chung, 1998; Song, 2001) and made in-depth interviews with Korean and Japanese climacteric women in order to develop a valid instrument in which socio-cultural environment and family relations especially with the spouse were reflected in Korea and Japan. Using this data and information, the instrument for climacteric symptoms was developed, and made it possible to measure the climacteric symptoms of Korean and Japanese women.

### *Purpose of the Study*

The purpose of this study was to develop an instrument (scale) for climacteric symptoms of Korean and Japanese women. For this, the following procedures were considered:

- 1) Examine the reliability.
- 2) Examine the validity of the scale.

### *Definition of Terms*

Climacteric symptoms refer to symptoms caused by oophorectomy, as well as symptoms accompanied by menopause, which indicates the transition from reproductive to non-reproductive phase. The symptoms also include the change of physical, physiological, mental, psychological, social and endocrine symptoms, related to degeneration and gradual loss of ovary's function (Korean Society of Menopause, 1994; Korean Society of Menopause, 2000; Lee et al., 1998).

## METHODS

### *Constructing a measurement instrument*

The process of developing an instrument to measure climacteric symptoms among Korean and Japanese women was as follows.

#### 1) Construction of a draft questionnaire through literature and in-depth interviews

From Dec. 1<sup>st</sup> 2003 to March 30<sup>th</sup> 2004, in-depth interviews were made with 26 women (15 in Jinju, Korea and 11 in Nagasaki, Japan) aged from 45 to 59 years who had not taken hormone replacement therapy to relieve the climacteric symptoms. A draft questionnaire with 45 items was constructed on the basis of the interview data and literature review.

#### 2) Examining the content validity of the draft questionnaire and constructing a preliminary instrument

Three obstetricians, three PhDs in nursing science, and a chief nurse who was exclusively in charge of climacteric management, one Korean PhD in Japanese philology, one Japanese PhD in Korean philology examined the draft questionnaire to evaluate content validity. They pointed out that uro-genital symptoms (6 items) might also appear due to the injury of delivery, infection and other causes as well. Therefore, these 6 items were deleted. Those items included the following: 'I feel itchy in the

vagina', 'I have a bad smell in the vagina', 'I feel pain when urinating', 'I frequently need to urinate', 'I leak out urine when laughing, coughing, sneezing or taking hard exercise', 'I urinate before arriving at a restroom'. Thus, the remaining 39 items constituted a preliminary questionnaire. These items were scaled by utilizing Likert scaling method: 1 for 'Strongly agree', 2 for 'Moderately disagree', 3 for 'Moderately agree', 4 for 'Strongly agree'. Thus, the higher the score of a climacteric symptom was, the more serious was the climacteric symptom.

#### 3) Research Design and Sample Data

A survey was conducted using a convenient sampling method in Jinju, Korea and Nagasaki of Japan during the period from April 1<sup>st</sup>, 2004 to July 10<sup>th</sup>, 2005. The respondents consisted of 380 climacteric women (256 Korean and 124 Japanese). Their ages ranged from 45 to 59 years. Respondents understood the research purpose and were willing to participate in the survey. In order to study climacteric symptoms accurately, responses from 35 women (34 Koreans and 1 Japanese) were discarded because they had taken hormone replacement therapy. Eventually, 345 responses were used for statistically analysis. Respondents were asked to complete the questionnaires themselves, and it took about 20 minutes to complete it for each person.

### *Statistical Analysis*

Data were analyzed using SPSS 12.0 version Statistical

**Table 1.** Demographic Characteristics of the Samples

(N = 345)

Variables	Categories	Korean women (N=222) n (%)	Japanese women (N=123) n (%)	Total (N=345) n (%)
Age	45–49	146 (65.8)	35 (28.5)	181 (52.5)
	50–54	57 (25.7)	48 (39.0)	105 (30.4)
	55–59	19 (8.6)	40 (32.5)	59 (17.1)
Occupation	Yes	96 (43.2)	88 (71.5)	184 (53.3)
	No	126 (56.8)	35 (28.5)	161 (46.7)
Family number	1–2	8 (3.6)	32 (26.0)	40 (11.6)
	3–4	90 (40.5)	72 (58.5)	162 (47.0)
	5–6	102 (45.9)	18 (14.6)	120 (34.8)
	7 ≥	22 (9.9)	1 (0.8)	23 (6.7)
Children number	0–1	11 (5.0)	20 (0.8)	31 (9.0)
	2–3	164 (73.9)	87 (70.7)	251 (72.8)
	4 ≥	47 (21.2)	16 (13.0)	63 (18.3)
Economic status	Upper	71 (32.0)	25 (20.3)	96 (27.8)
	Middle	138 (62.2)	94 (76.4)	232 (67.2)
	Low	13 (5.9)	4 (3.3)	17 (4.9)
Perceived health status	Good	61 (27.5)	33 (26.8)	94 (27.2)
	Ordinary	110 (49.5)	63 (51.2)	173 (50.1)
	Bad	51 (23.0)	27 (22.0)	78 (22.6)

Package.

1) The demographic characteristics were analyzed by using descriptive statistics.

2) Cronbach's alpha coefficient was obtained to test the reliability of the constructed scale.

3) Factor analysis was used to test the validity of the scale.

## RESULTS

### *Sample characteristics*

Among the respondent sample of 345 women used for

statistical analyses in this study, there were 222 Korean women (64.3%) and 123 Japanese women (35.7%). More than half of the Korean women were of age 45–49 (65.8%), but the most frequent age class for Japanese women was 50–54 (39%). Most of the Japanese women (71.5%) had a job, but only 43.2% of Korean women had a job. Most of Korean sample had 3–4 (40.5%) or 5-6 family members (45.9%), but more than half of Japanese women had 3–4 family members (58.5%). Most of Korean and Japanese women were of middle economic status (62.2% and 76.4%, respectively). Around half of the sample (49.5% for Korean, 51.2%

**Table 2.** Internal Reliability of the Preliminary Menopause Symptoms Instrument

(N = 345)

Item	Item Content	Corrected item-total correlation	Alpha if item deleted
1.	I am lonely because I don't have anybody who really understands me	.591	.951
2.	I have a feeling that I am mistreated by my husband, my husband's family, and was mistreated by my maiden home family.	.647	.950
3.	I feel empty, and I don't think that I am living well.	.686	.950
4.	I feel gloomy.	.708	.950
5.	I am not confident.	.575	.951
6.	I have a feeling of being sacrificed for the benefit of the family.	.586	.951
7.	I feel that I am being disregarded by my children.	.561	.951
8.	I don't want to meet people.	.482	.951
9.	I have reduced sexual desire.	.519	.951
10.	I am not satisfied with my sexual life.	.586	.951
11.	I am worried that my husband may have secret love affairs.	.347	.952
12.	I don't like to have sex.	.423	.952
13.	I avoid my husband's intimate touch and cares.	.422	.952
14.	Sometimes I want to die.	.605	.951
15.	I am tired easily.	.619	.950
16.	My skin became rough and dry.	.669	.950
17.	I have backaches.	.691	.950
18.	I have headaches.	.612	.950
19.	I have twinges and dull pain in my extremities.	.712	.950
20.	I have knee pains.	.623	.950
21.	I have a short memory(amnesia)	.578	.951
22.	My hands and feet are cold.	.480	.951
23.	I gained weight	.091	.954
24.	I have eye strain.	.461	.951
25.	I have shoulder stiffness.	.507	.951
26.	I am anxious or afraid.	.573	.951
27.	I can't concentrate.	.670	.950
28.	I have palpitations.	.655	.950
29.	I am hot without any reason, or I have hot flushes.	.595	.951
30.	I am restless.	.737	.950
31.	I have a feeling of suffocation or strangulation.	.590	.951
32.	I can't sleep well at night (insomnia).	.468	.951
33.	I become sharp, and lose my temper easily.	.640	.950
34.	I sweat during sleeping in the night time.	.520	.951
35.	I have dizzy spells.	.652	.950
36.	I am impatient.	.491	.951
37.	I sweat more nowadays than before.	.545	.951
38.	I have reduced vaginal discharge.	.509	.951
39.	I experience pain during sexual intercourse.	.536	.951

for Japanese)evaluated their current health status as ordinary (Table 1).

### Reliability

The results of the internal reliability for the scale items were presented in Table 2. Among the 39 items in the preliminary questionnaire, 1 item('I gained weight') was eliminated, because it's corrected item-total correlation was lower than 0.3. The Cronbach's alpha coefficient for the remaining 38 items amounted to 0.953.

### Construct validity

Construct validity focused upon theoretical validation by evaluating the relationship between the scale and each constituent item. In this study, factor analysis was used to evaluate construct validity.

#### 1) Adequacy for Factor analysis

As the p-value of Barlett's test of sphericity was .000 and KMO(Kaiser-Mayer-Olkin)value (.936) was higher than .06 (Table 3), our sample seemed to be adequate for factor analysis (Child, 1990; Nho, 2003).

#### 2) Factor Extraction

On the basis of literature review, eigenvalues and changes in scree plot(Child, 1990; Nho, 2003), 4 factors were extracted. After factor rotation by varimax method, the percent of the explained variance of factors were 13.938% for the 1st factor, 13.386% for the 2nd factor, 10.750% for the 3rd factor and 8.812% for the 4th factor, and thus total explained variance amounted to 46.886% among total variance of the 38 items (Table 4).

**Table 3.** KMO & Barlett's Test of Sphericity for the 38-item Correlation Matrix (N = 345)

KMO Measure of Sampling Adequacy		.936
Barlett's Test of Sphericity	Chi-Square	5738.423
	df	703
	Sig	.000

**Table 4.** Total Variance Explained (N = 345)

Factor	Eigen values	Extracted Sum of Squares Loadings			Rotated Sums of Squares Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.126	13.624	35.854	35.854	5.296	13.938	13.938
2	2.044	1.507	3.966	39.820	5.087	13.386	27.324
3	1.945	1.435	3.776	43.596	4.085	10.750	38.074
4	1.750	1.250	3.290	46.886	3.349	8.812	46.886

#### 3) Factor rotation and Factor naming

Principal axis factoring extraction method and varimax method was used for factor extraction and factor rotation, respectively. After factor rotation, 2 items with factor loading values lower than 0.4 were eliminated. Those items were 'I am worried that my husband may have secret love affairs' and 'My hands and feet are cold'. Finally, the scale developed consists of 36 items. For each 36 items, maximum factor loading values among the 4 factor loadings are presented in Table 5. The 1<sup>st</sup> factor containing 11 items was named as 'mental and psychological symptoms'. The 2<sup>nd</sup> factor containing 9 items was named as 'physical symptoms'. The 3<sup>rd</sup> factor containing 10 items was named as 'loss of autonomic nervous system symptoms', and the 4<sup>th</sup> factor containing 6 items was named as 'sexual symptoms'.

### Reliabilities of the measurement instrument

Reliability of the four factors and total instrument were presented in Table 6. The Cronbach's alpha of the 1st factor 'mental and psychological symptoms', the 2nd factor 'physical symptoms', the 3rd factor 'loss of autonomic nervous system symptoms', and the 4th factor 'sexual symptoms' were respectively .905, .829, .880, .821. Also, the Cronbach's alpha of the total instrument was .953.

## DISCUSSION

Choosing a proper instrument with high degree of reliability and validity is very important in order to get the correct results. One of the problems found through the literature review and in-depth interview was the distortion of the study findings resulting from the preconception about the different socio-cultural environment. The climacteric symptoms of Western women seemed to be different from those of Korean and Japanese women(Charles & Hammond, 1997; Douglas & Jeffery, 2000; Ju et al., 2005; Kudo et al., 2005; Nishibayashi, 2004; Rhee et al., 2001; Shima, 2004; Song, 2001). To

**Table 5.** Factor Loadings from the Rotated Factor Matrix : Principle Axis Factoring with Varimax Rotation

(N = 345)

Item	Factor			
	1	2	3	4
Mental and psychological symptoms.				
1. I feel empty, and I don't think that I am living well.	.686			
2. I feel gloomy.	.629			
3. I feel that I am being disregarded by my children.	.616			
4. Sometimes I want to die.	.606			
5. I am lonely because I don't have anybody who really understands me.	.578			
6. I am not confident.	.575			
7. I have a feeling that I am mistreated by my husband, my husband's family and was mistreated by my maiden home family.	.552			
8. I am anxious or afraid.	.549			
9. I don't want to meet people.	.536			
10. I have a feeling of being sacrificed for the benefit of the family.	.483			
11. I can't concentrate.	.477			
Physical symptoms.				
12. I have backaches.		.731		
13. I have twinges and dull pain in my extremities.		.653		
14. My skin became rough and dry.		.635		
15. I am tired easily.		.620		
16. I have headaches.		.599		
17. I have knee pains.		.578		
18. I have eye strain.		.522		
19. I have shoulder stiffness.		.521		
20. I have a short memory(amnesia).		.439		
Loss of autonomic nervous system symptoms.				
21. I sweat more nowadays than before.			.637	
22. I am hot without any reason, or I have hot flushes.			.592	
23. I sweat during sleeping in the night time.			.590	
24. I am restless.			.573	
25. I have a feeling of suffocation or strangulation.			.539	
26. I have dizzy spells.			.530	
27. I become sharp, and lose my temper easily.			.482	
28. I have palpitations.			.472	
29. I am impatient.			.422	
30. I can't sleep well at night(insomnia).			.401	
Sexual symptoms.				
31. I don't like to have sex.				.685
32. I am not satisfied with my sexual life.				.597
33. I have reduced sexual desire.				.571
34. I avoid my husband's intimate touch and cares.				.557
35. I experience pain during sexual intercourse.				.520
36. I have reduced vaginal discharge.				.508

**Table 6.** Reliabilities of the Four Factors and Total Instrument (N = 345)

Factor	Mean SD	Cronbach's alpha
Mental and psychological symptoms	1.87 7.13	.905
Physical symptoms	2.52 6.71	.829
Loss of autonomic nervous system symptoms	1.93 6.52	.880
Sexual symptoms	2.17 4.25	.821
Total	2.11 21.09	.953

measure the climacteric symptoms properly, all of the social, cultural, familial and psychiatric aspects should be considered. Also, instruments either constructed in the West or measuring only physical symptoms do not seemed to measure correctly the menopause symptoms for Korean and Japanese women. So, the instrument developed in this study had a significance in two senses: 1) it was constructed multi-dimensionally, including the mental and psychological symptoms, physical symptoms, loss of autonomic nervous system symptoms, and sexual symptoms, and 2) it was constructed on the basis

of the in-depth interviews with Korean and Japanese climacteric women and literature reviews.

In the study, our instrument was evaluated in the context of content validity and construct validity. Cronbach's alpha, which was the measure of the internal reliability for the 36 items, was .953. So, our instrument seemed to be appropriate to measure climacteric symptoms and can be contribute to easily finding women who are suffering climacteric symptoms in Korea and Japan.

## CONCLUSION AND SUGGESTION

The purpose of this study was to develop a valid and reliable instrument for climacteric of Korean and Japanese women. Through the literature review, in-depth interview, and consultation with medical specialists, one Korean PhD in Japanese philology, one Japanese PhD in Korean philology, 39 items were selected as a preliminary questionnaire. Using the preliminary questionnaire, the survey was conducted in Jinju of Korea and Nagasaki of Japan during the period from April 1st, 2004 to July 10th, 2005. After discarding inappropriate cases, the final sample consisted of 345 women (222 Koreans and 123 Japanese) aged 45-59 years and who had never had hormone replacement therapy. The data were analyzed by using SPSS 12.0 version. Reliability and validity of the instrument consisting of 39 items were examined. Also, by factor analysis and item analysis, the instrument finally developed consists of 36 items. Four factors were extracted from the 36 items by using factor analysis: 1) mental and psychological symptoms, 2) physical symptoms, 3) loss of autonomic nervous system symptoms, and 4) sexual symptoms. The above 4 factors explained 46.88% of total variance, and Cronbach's alpha of the instrument amounted to .953. Therefore, we could conclude that the instrument had the authentic degree of reliability and validity, and that the instrument of climacteric symptoms was multidimensional.

In this study, we have tried to construct a scale of climacteric symptoms that can be used both for Korean and Japanese climacteric women and in the future, we are planning to retest and modify our instrument by using larger random samples.

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