

The Comparison of Korean and Japanese College Women's Self-evaluation on Obesity and Attitude to Weight Control

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Abstract

This study compares Korean and Japanese college women's self-evaluation on obesity and examines their attitude to weight control. The subjects of this study were 101 college women residing in Daegu-si of Korea and 123 Japanese college women living in Saga-ken of Japan. A survey was conducted by each of the participants and was analyzed. This self-evaluation on obesity revealed that 47.5% of Korean college women answered that they were obese while 31.7% of Japanese college women responded they were. The results of this study show that there are about 5% of college women in both Japan and Korea who thought they were obese, even though they were actually normal or underweight. Both Korean and Japanese women who considered themselves obese selected wrong eating habits as the cause of their obesity. In terms of their recognition on ashamedness, Japanese college women showed rather stronger recognition than Korean ones. In addition, more Korean college women responded that they had been suggested to lose weight than Japanese ones. In terms of the factors that motivate weight control, few women in either Korea or Japan controlled their weight for health reasons. Most of the Korean and Japanese college women chose the size of their clothes, their undesirable look reflected on the mirror, or having no boyfriend as the chief motivating factors for weight control. In terms of their attitude towards weight control, Japanese college women checked their weight more frequently than Korean ones. Moreover, both Korean and Japanese college women were directly motivated to lose weight while they were talking with their friends.

Key words: Korean and Japanese college women, self-evaluation, obesity, weight control

INTRODUCTION

Obesity is a serious disease that threatens the health of contemporary people. Excessive fear of obesity makes people who are even in a normal weight bracket perceive of themselves as being fat. This incorrect self-evaluation can cause impaired health in some people. Recently, Korean society has likely given a high value to a beautiful appearance, with perceived obesity being negative image (1). Quite a number of women in Korea have a distorted perception about their body shapes, and idealize the skinny physical constitution; thus, they have been reported to undergo weight control efforts solely for the sake of being thin (2,3). Specifically, female college students were found to be sensitive to their appearances more than any other age groups, adopting the skinny physical constitution as ideal and becoming dissatisfied with their bodies (4). Also, despite their normal weights, a vast majority of female college students answered that they were rather fat and were reported to have low sat-

isfaction with their bodies (5). Such dissatisfaction with their bodies was also related to weight control behaviors (6). The body mass index of Korean female college students was on the normal level; however, the number of female college students who were trying to lose weight was reported as being considerably high. Additionally, along with the report that even underweight female students desired to have a skinny physical constitution, some female college students who were sensitive to their weight have attempted to lose weight by using inappropriate means (7). Thus, problems of poor nutrition and the occurrence of associated disease have been proposed together (3). Likewise, with growing social interactions, female college students sensitive to their appearance try to have the slender, perceived beautiful body shapes through inappropriate weight loss methods, which creates a number of diverse problems.

The instances of this phenomenon are rising as the percent of twenty-something women who want to be slender is increasing in both Korea and Japan. According

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to the result of Japan's national health and nutrition research, the rate of low weight (a Body Mass Index (BMI) under 18.5) is reported to have increased 2 times during the last 20 years (8). A study on the preference of thin body shapes and recognition of self-body shapes targeting 66 Japanese female college students who reside in Osaka (average age of 21.0 ± 1.0), reported that most of these women preferred an approximately 7% thinner shape than their own, even though they were of normal weight and did not need to lose more weight (9). For Japanese and Korean female college students, this wrongful recognition of body shapes reportedly causes the side effects of having an undesirable diet, as well as bad influences on eating attitudes and health conditions (10,11). A variety of studies have been conducted on diet to date, but comparative research into the self-assessment of obesity and weight control aimed at female college students in Korea and Japan has been quite limited in number.

This study compares the self-assessment of obesity and attitude toward weight control in female college students and will be used to create better correct weight control plans for women in their twenties.

MATERIALS AND METHODS

The subjects of this study were 101 college women residing in Daegu-si of Korea and 123 Japanese college women living in Saga-ken of Japan. A survey was conducted by each of them and the results were analyzed.

This study calculated body mass by applying the Broca's Index formula based on the height and weight that the respondents recorded. Body mass was shown as a percentile in comparison to the difference between the actual weight and the standard weight of the research subjects. Overweight is the term that describes the situation when the actual weight exceeds 10% of the standard weight, and obesity is defined as when the actual weight exceeds 20% of the standard weight (12-15).

The questionnaire used for this research was composed of self-reporting survey questions. Some of the questions in the "general" category of the questionnaire included: gender, residence location, residence type, amount of spending money, and means of getting to school. The categories of "central tendency and variation", which shows the degree of distribution, were examined as the body type characteristics. The degree of obesity among Korean and Japanese female college students was determined, and compared to the self-determined body size and the actual degree of obesity. To study the attitude towards obesity by the participants

who considered themselves obese, questions were asked about the cause of their obesity, their desire for weight control, and the recognition of shame, as well as weight loss advice, and participation in obesity class. For insight into the motivational factors concerning weight control, the questions covered topics such as: garment size and design, feelings when looking into a mirror, being compared to thin people, and not having a boyfriend. These questions are similar to those asked in other such studies (15-17). Lastly, to learn about attitudes towards weight control, questions such as the degree of interest regarding weight loss, the amount of times they weighed themselves, and when there was the biggest interest on weight were asked.

The study used a statistical program, the Window SAS 8.0 program, for data analysis and also used a descriptive analysis and a cross-analysis method for verifying significance by item. The significance probability was concluded on the basis of $p < 0.05$.

RESULTS AND DISCUSSION

General characteristics

Questions listed in Table 1 were designed to discover general characteristics of the participants. These ques-

	A division	N(%)	
		Korean	Japanese
Residence place	With a family	54 (53.5)	70 (56.9)
	A kinsman	5 (5.0)	0 (0)
	A dormitory	4 (4.0)	5 (4.1)
	A boarding house	3 (3.0)	2 (1.6)
	Self-boarding	20 (19.8)	44 (35.8)
Residence form	The others	15 (14.9)	2 (1.6)
	An apartment	36 (35.6)	39 (31.7)
	Row house	27 (26.7)	18 (14.6)
	Independence house	17 (16.8)	62 (50.4)
	A multiplex house	18 (17.8)	3 (2.4)
Spending money per month	The others	3 (3.0)	1 (0.8)
	Less than 50,000₩	19 (18.8)	23 (18.7)
	60,000 ~ 100,000₩	17 (16.8)	14 (11.4)
	110,000 ~ 200,000₩	39 (38.6)	28 (22.8)
	210,000 ~ 300,000₩	23 (22.8)	28 (22.8)
Means of getting to school	More than 310,000₩	3 (3.0)	2 (1.6)
	On foot	44 (43.6)	6 (4.9)
	By bicycle	1 (1.0)	8 (6.5)
	By bus	51 (50.5)	16 (13.0)
	By car	3 (3.0)	56 (45.5)
Attending time	The others	2 (2.0)	28 (22.8)
	Less than 5 ~ 10 minutes	29 (28.9)	13 (10.6)
	10 ~ 20 minutes	18 (17.8)	25 (20.3)
	21 ~ 30 minutes	13 (12.9)	20 (16.3)
	31 ~ 40 minutes	12 (11.9)	14 (11.4)
	41 ~ 60 minutes	29 (28.7)	19 (15.5)
	More than 60 minutes	0 (0.0)	32 (26.0)

Table 2. Anthropometric characteristics of subjects

Variable	Korean				Japanese			
	<i>s</i>	<i>S_k</i>	<i>P_d</i>	<i>s</i>	<i>S_k</i>	<i>P_d</i>		
Age (yrs)	21.0	2.5	6.9	58.6	20.8	0.7	2.3	13.1
Height (cm)	161.7	4.8	0.2	-0.9	160.9	7.7	0.3	-0.03
Body weight (kg)	53.7	6.7	0.3	-0.09	54.9	9.2	0.7	-0.06
BMI (kg/m ²)	20.5	2.4	0.6	0.1	21.2	2.7	0.8	0.8
Obesity rate	-3.0	11.5	0.7	0.1	0.5	13.1	0.8	0.9

mean, *s* standard deviation, *S_k* skewness, *P_d* kurtosis.

tions included their residence, residential type, monthly personal expenses, and means of getting to school. For the Korean students, 53.5% of them lived with their families and 19.8% lived independently. The Japanese students showed similar outcomes, constituting 56.9% and 35.8%, respectively. The results of residence types, showed that the Korean students mainly lived in the following types of domiciles, from greatest to least: apartment, row house, and a multiplex house; whereas Japanese female college students lived in these types of residences, from greatest to least: independence house, apartment, and row house. The difference in residential types may reflect the cultural differences of each country. With regard to their monthly personal expenses, most of the Korean participants receive about 110,000~200,000 won (38.6%), while the Japanese students were more distributed over the larger range of 110,000~310,000 won or over (22.8%). This result matched a research report by Cho and Choi (17). To get to school, Korean female college students mainly used a bus, at 50.5% of the respondents, whereas Japanese female college students mostly used private cars, at 45.5%. Also, it takes about 40~60 min for Korean students to get to school in most cases, and more than 60 min for most of the Japanese participants. These results may also be related to the cultural differences of country. Despite these differences, it was found that there were many more similarities in general characteristics among female college students in their twenties.

Physical characteristics

The central tendency and dispersion regarding the entire data were demonstrated in Table 2. When looking into the pattern of distribution by the central tendency values of the entire groups, the average age was 20, and the height showed a negatively skewed distribution; thus, only some of the respondents were shorter than the average of 161 cm. Their average weight was 54 kg. Also, the average of body mass was close to normal. These results display similar trends with previous research results in Korea (16,17), and shows that Korean and Japanese female college students have similar physical

characteristics.

Degree of actual obesity

The body mass of female college students was presented in Table 3. Most of the Korean female college students had normal weights, at 56.4%, with 2.0% being seriously underweight, 27.7% being underweight, 9.9% being overweight, and 4.0% being obese. Japanese students revealed a similar trend of the following, in order: normal weight (52.9%), underweight (23.6%), overweight (15.5%), obese (5.7%), highly obese (1.6%), and seriously underweight (0.8%). Additionally, research by Ogino et al. (9) showed similar tendencies, with 20.6% of the young women studied having a low weight, 77.8% normal weight, 1.6% overweight, and 0% obesity. This study intended to consider the women's level of perception about their weights to see if they preferred to be underweight so as to maintain a more slender appearance.

Degree of obesity recognition

The results of the question about whether the participants felt themselves to be obese are shown in Table 4. 47.5% of Korean female college students perceived themselves as being obese; however, as shown in Table 3, only 13.9% of female college students actually were overweight or obese, so there was a high difference in

Table 3. Degree of actual obesity N(%)

A division	N(%)	
	Korean	Japanese
Extreme low weight -20≤	2 (2.0)	1 (0.8)
Low weight ≤ -10	28 (27.7)	29 (23.6)
Normal ± 10	57 (56.4)	65 (52.9)
Over weight ≥ 10	10 (9.9)	19 (15.5)
Obesity ≥ 20	4 (4.0)	7 (5.7)
Extreme obesity ≥ 30	0 (0.00)	2 (1.6)
Total	101 (100)	123 (100)

Table 4. Degree of obesity recognition N (%)

A division	Korean	Japanese
Obesity	48 (47.5)	39 (31.7)
Not obesity	53 (52.5)	84 (68.3)
Total	101 (100)	123 (100)

Table 5. Degree of actual obesity among female college students who identified themselves as obese N (%)

A division		Korean	Japanese
Real obesity grade	Low weight	1 (2.1)	2 (5.1)
	Normal	5 (10.4)	3 (7.7)
	Over weight	29 (60.4)	12 (30.8)
	Obesity	9 (18.8)	16 (41.0)
	Extreme obesity	4 (8.3)	6 (15.4)
Total		48 (100)	39 (100)

perceived weight compared to actual weight. 31.7% of the Japanese students also answered that they were obese, but the actually body mass index indicating obesity in the women was 22%, again indicating incorrect perceptions of body size.

Degree of actual obesity among female college students who recognized as obese

When looking into the actual body mass of 48 Korean female college students (47.5%) and Japanese female college students (31.7%) who answered as being obese

regardless of their actual weights (Table 5), for Korea, the actual weight of most female college students answering as being obese was normal, constituting 60.4%, with the other results as follows: overweight (18.8%), underweight (10.4%), and obese (8.3%). As for the Japanese students the responses were: overweight (41%), normal weight (30.8%), obese (15.4%), and highly obese (5.1%). These results are shown to be similar to a report that the higher the body mass of respondents, the more intensively they felt themselves to be obese and the more they were likely to feel troubled while having a much greater interest in weight (18). All the more, some of them perceived themselves as obese although they were of normal weight or were underweight; thus, it was confirmed that there was a gap in the Korean and Japanese female college students' perceptions about their weights between actual weights and perceived weights (16). These results matched a research report that they were more influenced by perceived body shape regarding how they assess and perceive themselves over their actual weights (1).

Attitude towards obesity of female college students who recognized as obese

The attitude toward obesity in Korean and Japanese female college students who consider themselves obese was investigated, and the results are exhibited in Table

Table 6. Attitude towards obesity of female college students who recognized as obese N (%)

A division		Korean	Japanese	Total	
Cause of obesity	be like parents	1 (2.1)	0 (0.0)	1 (1.15)	0.2160
	wrong diet habit	31 (64.6)	20 (51.3)	51 (58.62)	
	lack of exercise	13 (27.1)	18 (46.2)	31 (35.63)	
	others	3 (6.3)	1 (2.6)	4 (4.60)	
Weight control desired	1	0 (0.0)	1 (2.6)	1 (1.15)	0.0190*
	2	0 (0.0)	2 (5.1)	2 (2.30)	
	3	11 (22.9)	16 (41.0)	27 (31.03)	
	4	37 (77.1)	20 (51.3)	57 (65.52)	
Level of shame	1	2 (4.2)	0 (0.0)	2 (2.30)	0.0648
	2	4 (8.3)	3 (7.7)	7 (8.05)	
	3	26 (54.2)	13 (33.3)	39 (44.83)	
	4	16 (33.3)	23 (59.0)	39 (44.83)	
Being offered inducement of weight losses	1	0 (0.0)	5 (12.8)	5 (5.75)	0.0164*
	2	4 (8.3)	6 (15.4)	10 (11.49)	
	3	5 (10.4)	8 (20.5)	13 (14.93)	
	4	25 (52.1)	11 (28.2)	36 (41.38)	
	5	14 (29.2)	9 (23.1)	23 (26.44)	
Intention to participate in obesity clinic	1	0 (0.0)	2 (5.1)	2 (2.30)	0.1911
	2	2 (4.2)	1 (2.6)	3 (3.45)	
	3	9 (18.8)	13 (33.3)	22 (25.29)	
	4	17 (35.4)	13 (33.3)	30 (34.48)	
	5	20 (41.7)	10 (25.6)	30 (34.48)	

1. not very right, 2. not right, 3. normal, 4. right, 5. very right.

* means the correlation is significant at $p < 0.05$.

6. Both Korean and Japanese female college students said that incorrect eating habits were the greatest cause of obesity. This result was found to be similar to a report (19) that female college students eat little by controlling their eating for the sake of weight control in many cases, and over half of obese people always or sometimes overeat. As to weight control, most of both Korean and Japanese female college students were found to hope to control weight, and regarding the perception about shame in relation to their weights, Korean female college students answered yes (54.2%) and very much (33.3%). Japanese female college students also responded very much (59.0%) and yes (33.3%). If both of these responses are taken into consideration, there is no significant difference in the Japanese students' perception about shame compared to that of the Korean students; however, when looking only at the strongest response ("very much"), we see that the Japanese students' perception of shame was relatively stronger. Plus, when asked whether they were advised to reduce weight, most Korean female college students said yes, but Japanese female college students answered evenly yes and no ($p < 0.05$). This response suggests another difference in the cultural perspective between the two countries. In addition, as to a question about whether they have an intention to join an obesity class, most of the Korean and Japanese female college students were found to be willing to join regardless of their weights. Accordingly, they seemed to demonstrate their will to control their weights by using a systematic program.

Motivational factors for weight control

The motivational factors for weight control by Korean and Japanese female college students are displayed in Table 7. The most common motivational factor for both groups of students answered by a "right" was "looking into the mirror", followed by "clothing sizes". As to

questions in which they answered "very right", they were discovered to desire weight control when they had no boyfriend (50.5%) and they lacked self-confidence (26.7%). In addition, when considering questions in which Japanese female college students said "right", they produced similar results (16,17) to the Korean female college students. As to questions in which they answered "very right", they were found to desire weight control when they had no boyfriend (41.5%) and when looking at their clothing sizes (41.5%). The results showed that visual reasons as 'looking beautiful' and 'being able to wear clothes that I like' were reported as the highest reason for Japanese females in their 20s preferring thin body shapes, which showed a tendency similar to the results of this research (9).

Attitude toward weight control

The study looked into attitude toward weight control by Korean and Japanese female college students (Table 8). Most Korean and Japanese female college students answered to being interested in the loss of weight ($p < 0.05$). Also, in terms of the number of time they checked their weight, Japanese female college students (34.2%) were shown to weigh themselves more often than Korean female college students (11.9%). In particular, according to research done by Ogino et al. (9), Japanese female college students saying they are nervous about their weight was the most common reason for frequently measuring body weight, followed by hoping to live healthily. The period during which they were most interested in weight was in their high school days for both Korean and Japanese female college students ($p < 0.05$). Also, the direct motivation for weight control was reported to have appeared during conversations with friends for both Korean and Japanese female college students, and the main reasons for weight control were discovered to be first appearance and then health ($p < 0.05$).

Table 7. Motivational factors for weight control

	Korean					Total	Japanese					Total	(p)
	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)		
Clothes size	6	13	15	41	26	101 (45.1)	5	9	18	40	51	123 (54.9)	7.1 (0.129)
Clothes design	7	10	24	34	26		9	16	19	44	35		2.7 (0.611)
A looking glass	2	6	23	45	25		3	12	20	52	36		2.8 (0.598)
Compare with slim	8	13	26	32	22		10	12	27	36	38		2.7 (0.618)
Talking low about me	11	20	23	34	13		9	12	21	46	35		12.1 (0.016)
Seeing slim entertainer performer w/o sexual friend	5	11	28	29	28		17	22	25	39	20		11.1 (0.025)
Bad health (or condition)	4	5	11	30	51		8	10	15	39	51		2.7 (0.617)
Lacking of confidence	28	39	18	11	5		42	30	29	15	6		5.3 (0.256)
	8	8	29	29	27		17	17	22	36	31		6.4 (0.173)

1. not very right, 2. not right, 3. normal, 4. right, 5. very right.
N. So provide % value as response rate.

Table 8. Attitude toward weight control

N(%)

A division		Korean	Japanese	Total	
Rate of interest in weight loss	Entirely unconcerned	0 (0.0)	4 (3.3)	4 (1.79)	0.0016*
	Unconcerned	5 (5.0)	7 (5.7)	12 (5.36)	
	Normal	7 (6.9)	26 (21.1)	33 (14.73)	
	A little concerned	29 (28.7)	41 (33.3)	70 (31.25)	
	Very concerned	60 (59.4)	45 (36.6)	105 (46.88)	
Rate of weight	Very right	12 (11.9)	42 (34.2)	54 (24.11)	0.0003*
	Right	21 (20.8)	19 (15.5)	40 (17.86)	
	Normal	29 (28.7)	27 (22.0)	56 (25.00)	
	Not right	34 (33.7)	22 (17.9)	56 (25.00)	
	Not very right	5 (5.0)	13 (10.6)	18 (8.04)	
Be concerned time of weight	Unconcern	3 (3.0)	9 (7.3)	12 (5.36)	0.0340*
	A primary school	2 (2.0)	9 (7.3)	11 (4.91)	
	A junior high school	22 (21.8)	27 (22.0)	49 (21.88)	
	A high school	58 (57.4)	49 (40.0)	107 (47.77)	
	A university	16 (15.8)	29 (23.6)	45 (20.09)	
An immediate motive of weight loss	The effect of public eye	15 (16.9)	9 (10.5)	24 (13.71)	0.3825
	School class	4 (4.5)	11 (12.8)	15 (8.57)	
	Conversation with a friend	26 (29.2)	26 (30.2)	52 (29.71)	
	Family	6 (6.7)	4 (4.7)	10 (5.71)	
	A different sex	7 (7.9)	8 (9.3)	15 (8.57)	
	The others	31 (34.8)	28 (32.6)	59 (33.71)	
The main reason of weight loss	Health	22 (24.7)	29 (33.7)	51 (29.14)	0.0305*
	Appearance	51 (57.3)	49 (57.0)	100 (57.14)	
	Laughing stock of friend	0 (0)	1 (1.2)	1 (0.57)	
	Getting a job	8 (9.0)	0 (0)	8 (4.57)	
	Discomfort of action	6 (6.7)	6 (7.0)	12 (6.86)	
	The others	2 (2.3)	1 (1.2)	3 (1.71)	

* means the correlation is significant at $p < 0.05$.

REFERENCES

- Rhee JH. 2007. A study on effects of somatotypes and stress on body image and preferences of clothing image. *The Research Journal of the Costume Culture* 15: 1084-1099.
- Seymour M, Hoerr SL, Huang YL. 1997. Inappropriate dieting behaviors and related lifestyle factors in young adults: are college students different? *J Nutr Educ* 29: 21-26.
- Lee KH, Hwang KJ, Her ES. 2001. A study on body image recognition, food habits, food behaviors and nutrient intake according to the obesity index of elementary children in Changwon. *Korean J Comm Nutr* 6: 577-591.
- Lim JY, Rha HB. 2007. Weight control and associated factors among health-related major female college students in Seoul. *Korean J Comm Nutr* 12: 247-258.
- Kim KW, Lee MJ, Kim JH, Shim YH. 1998. A study on weight control attempt and related factors among college female students. *Korean J Comm Nutr* 3: 21-33.
- Wardle J, Haase AM. 2006. Step to a body image and weight control in young adults: international comparisons in university students from 22 countries. *Inter J Obesity* 30: 644-651.
- Ryu HK, Yoon JS, Park DY. 1999. A study of factors influencing weight control behavior in adolescent females. *Korean J Comm Nutr* 4: 561-567.
- Japan's national health and alimentation research. 2005. Ministry of health, labour and welfare 2005 Japan's national health and alimentation research result report. *Daiichi Shuppan*, Tokyo.
- Ogino T, Hasui R, Hosoda A, Yamamoto Y. 2006. Survey on desire to be slim, consciousness of body image and past dieting experience of young females. *Journal of Human Life Sciences* 5: 1-9.
- Prirke KM, Schweiger U, Strowitzki T, Tuschl RJ, Laessle RG, Broocks A, Huber B, Middendorf R. 1998. Dieting causes menstrual irregularities in normal weight young women through impairment of episodic luteinizing hormone secretion. *Fertil Steril* 51: 263-268.
- Yamashiro G. 1991. Endocrinological study of secondary amenorrhea associated with weight loss in young women. *J Jusen Med Soc* 100: 325-340.
- Yang MO. 2004. The effect of recreation and dietary habits on obesity in elementary school children. *MS Thesis*. Chinju National University of Education, Jinju, Korea.
- Yang MO, Kim MO, Kim HJ. 2008. A study on leisure activities effects on obesity in elementary school children. *J Korean Practical Arts Education* 14: 133-152.
- Kim MO, Chang UJ. 2009. A study on the perception of obesity by age and the attitude toward weight control. *Korean J Food Nutr* 22: 110-122.
- Kim MO, Eun JG, Chang UJ. 2009. Recognition of body weight and body part satisfaction in female college students. *Korean J Food Nutr* 2: 205-214.
- Lee JH, Kim MS, O JH. 2007. A comparative study on perceptions of body image, body satisfaction, and dietary habits of beauty art major and non-major female college

- students. *J East Asian Soc Dietary Life* 17: 463-473.
17. Cho HR, Choi J. 2007. Relationship between body satisfaction and appearance enhancement behavior of college students. *Korean Journal of Human Ecology* 16: 825-835.
 18. Kim OS. 2002. BMI, body attitude and dieting among college women. *J Korean Acad Adult Nurs* 14: 256-264.
 19. Kern LS, Friedman KE, Reichmann SK, Costanzo PR, Musante GJ. 2002. Changing eating behavior a preliminary study to consider broader measures of weight control treatment success. *Eating Beh* 3: 113-121.

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