

A survey of overweight, body shape perception and eating attitude of Korean female university students

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Jinhee Woo. A survey of overweight, body shape perception and eating attitude of Korean female university students. *JENB.*, Vol. 18, No. 3, pp.287-292, 2014 **[Purpose]** We obtained basic data on a proper weight loss training program by considering the relationship between body mass index (BMI), the perception of appearance, and eating attitudes of Korean female university students. **[Methods]** The survey and anthropometry for the perception of appearance and eating attitudes were conducted targeting 657 female university students located in Seoul, Busan, Ulsan, Daejeon, Chungcheongnam-do, and Gangwon-do South Korea who were not specializing in physical education. **[Results]** The underweight group accounted for 21.16% of the population, the normal weight group comprised 69.71%, the overweight group was 6.09%, and the obese group accounted for 3.04%. The satisfaction rate of appearance was 56.16%, the dissatisfaction rate was 43.84%, and normal-weight students who were dissatisfied with their own appearance comprised 48.5%. The More obese students were more dissatisfied with their appearance. As a result of investigating eating attitudes, 37.75% of all subjects had a risk for an eating disorder, and 38.6% were normal weight but showed a risk for an eating disorder. More obese (BMI) subjects were at higher risk for an eating disorder. **[Conclusion]** The BMIs of the Korean female university students were lower than those of European and American Caucasian women students, but the dissatisfaction of Korean female university students with their appearances was greater than that of European and American students, indicating that more Korean female university students were suffering from an eating disorder. It is predicted that the incidence of eating disorders, such as anorexia and bulimia, will rise in Korean women if there is no accurate understanding and measure to identify the high risk group for an eating disorder. **[Key words]** Body mass index, body shape, eating attitude, eating disorder, overweight.

INTRODUCTION

Young adults in college often discover the relationship between self-concept decline, emotional distress, depression, and anxiety [1,2]. In addition, a university student must adapt to a new society called a university to study [3]. It is also a time that female students pay attention to their appearance within their peer group. Many female university students go on diets to obtain the preferred thin body shape, but they often use inappropriate methods such as vomiting, crash diets, extreme fasting, or drug use [4,5]. Chronic dieting behavior can aggravate eating attitudes, and result in excessive interest in body image, resulting in a negative concept of self and an eating disorder [6]. However, despite the great interest in weight loss, overweight and obesity are increasing in all ages.

Overweight and obesity associated with the wrong lifestyle,

such as poor eating attitudes and lack of exercise, appear prominently in female university students [7], and there is increased risk that these overweight and obese women will develop future chronic diseases [8]. It is clear that female students with excess interest in their own appearance may actually worsen their weight-related problems. It seems that they have not received the necessary training to handle these problems or they are unaware of proper weight management techniques. According to results of investigating actual diet conditions, 10.9% of all respondents showed the possibility for an eating disorder, and 29.3% and 64.9% in the underweight and normal weight groups, respectively, answered that they have tried to control their weight [9]. This result indicates that this group is influenced by the mass media and friends [10] and that excess dieting actually occurs in students who do not need to lose weight. Therefore, proper

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education is essential from infancy to manage a healthy proper weight, which is also necessary to reduce risk factors associated with life habits. A clear understanding of the relationship among weight status, health and lifestyle indicators, actual weight management conditions of the target group, and the perception of appearance are important, but information on current Korean female university students is quite scarce.

Thus, the objectives of this study were to investigate the issue of health, to obtain basic data on a proper weight loss training program considering the relationship between body mass index (BMI), perception of appearance, and eating attitudes of Korean female university students.

METHODS

Subjects

The subjects of this study were female university students who were currently at a university located in Seoul, Busan, Ulsan, Daejeon, Chungcheongnam-do, or Gangwon-do and who did not specialize in physical education. A self-record survey and anthropometry were obtained through questionnaires for the perception of appearance and the eating attitudes of these subjects. Before preparing the questionnaire, 700 students who heard the explanation for the questionnaire and agreed became the research subjects. A total of 657 completed the questionnaire and were used in the final results analysis.

Anthropometric measurements

The weight of the subjects was obtained in light clothing without shoes and measured to the nearest 0.1 kg using an electric balance. Height was measured to the nearest 0.1 cm in an erect posture without shoes using a stadiometer. BMI was calculated by dividing body weight converted into kg by the square of the height converted into meters. The subjects were classified into an underweight group (BMI, $< 18.5 \text{ kgm}^{-2}$), a normal group (BMI, $18.5\text{-}22.9 \text{ kgm}^{-2}$), and the overweight group (BMI, $23.0\text{-}24.9 \text{ kgm}^{-2}$) using the adult criteria of the Korean Society for the Study of Obesity (2000).

Body shape

Perception of appearance was investigated using the 34-item Body Shape Questionnaire (BSQ) [11] developed by Cooper *et al.* High scores are associated with bulimia nervosa. A high score may also indicate a woman who pays excess attention

to her weight and appearance or is dissatisfied with her appearance. A score > 129 was defined as the high score cut-off based on the average score (129.3 ± 17.0) for bulimia [3]. The low score cut-off criteria was < 112 [4], and subjects with this score are satisfied with their appearance.

Eating attitudes

Eating attitudes were investigated using the 26-item Eating Attitudes Test (EAT-26) [12] developed by Garner *et al.* This check record is used as a screening test for eating disturbances and anorexia nervosa, and eating attitudes and behavior are measured. The cut-off criterion of the EAT 26 is > 21 points, and a higher score indicates an abnormal eating pattern [13].

Statistical analysis

The data were analyzed using SPSS ver. 18.0 software (SPSS, Inc., Chicago, IL, USA). Means and standard deviations were obtained as continuous variables, and frequencies were obtained as categorical variables. Cross-tabulation was applied to determine the difference between BMI categories, and Pearson's chi-square test was used to test for significant differences between group profiles. The independent sample *t*-test and one-way analysis of variance were applied to analyze differences between groups, and the Bonferroni post-hoc test was performed for post-verification. Pearson's correlation coefficient was obtained for the correlation analysis among the BSQ, EAT-26, and BMI. A $p < 0.05$ was considered significant.

RESULTS

The physical measurements of the subjects are shown in Table 1. Average weight, height, and BMI were 52.61 ± 6.53 kg, 161.63 ± 4.99 cm, and $20.13 \pm 2.22 \text{ kgm}^{-2}$, respectively. The classification according to BMI is the same as shown in Table 2. The underweight group accounted for 21.16% of the subjects, the normal weight group was 69.71%, the

Table 1. Anthropometric measurements of the subjects (mean \pm SD; $n = 657$)

Measurement	Age (yrs)	Weight (kg)	Height (cm)	BMI (kgm^{-2})
Mean \pm SD	20.04 ± 1.81	52.61 ± 6.53	161.63 ± 4.99	20.13 ± 2.22

SD, standard deviation; BMI, body mass index.

Table 2. Distribution according to categories

Interpretation	Underweight	Normal	Overweight	Obese
Cut-off points	< 18.5	$18.5\text{-}22.9$	$23.0\text{-}24.9$	≥ 25.0
%	21.16	69.71	6.09	3.04

Table 3. BSQ and EAT scores (mean \pm SD) of subjects classified according to diagnostic category

Mean \pm SD	BSQ			EAT	
	Low	Medium	High	Normal	High
Categories					
Cut-off	< 112	112-128	> 128	< 21	\geq 21
n	369	113	175	409	248
%	56.16	17.20	26.64	62.25	37.75
BMI (kgm ⁻²)	19.49 \pm 2.06 ^a	20.65 \pm 1.81 ^b	21.14 \pm 2.33 ^b	19.85 \pm 2.17	20.58 \pm 2.25
F-value		40.818			-0.727
p-value		< 0.001*			0.001 [†]

BSQ, Body Shape Questionnaire; EAT, Eating Attitudes Test.

^{a,b} means with different superscript letters differ significantly by the Bonferroni *post-hoc* test.

* $p < 0.001$, Significantly different by one-way analysis of variance, $p < 0.01$. Significantly different by independent sample *t*-test.

Table 4. BSQ and EAT for the BMI categories among subjects. (%)

Categories	Underweight	Normal	Overweight	Pearson chi-square	p-value
	Low	Medium	High		
BSQ	82.7	51.5	30.0	66.132	< 0.001*
	7.2	20.3	18.3		
	10.1	28.2	51.7		
EAT	74.8	61.4	40.0	22.144	< 0.001*
	25.2	38.6	60.0		

* $p < 0.001$

Table 5. Correlation between BSQ and EAT by BMI

	Pearson correlation with BMI	
	r	p-value
BSQ	0.393	< 0.001*
EAT	0.172	< 0.001*

* $p < 0.001$

overweight group was 6.09%, and the obese group was 3.04% of all subjects.

A low BSQ score of < 112 was given to 56.16% of the subjects, a medium score of 112-128 was given to 17.20%, and a high score of > 129 was given to 26.64%. BMI values according to the low, medium, and high BSQ categories were 19.49 \pm 2.06, 20.65 \pm 1.81, and 21.14 \pm 2.33 kgm⁻², respectively; the BMI in the low category was significantly lower ($p < 0.05$). The EAT normal score of < 21 was given to 62.25% of subjects, and the high score of > 21 was given to 37.75%. BMI values according to the normal and high EAT categories were 19.85 \pm 2.17 and 20.58 \pm 2.25 kgm⁻², respectively.

The distribution ratios of the low, medium, and high BSQ categories for underweight were 82.7%, 7.2%, and 10.1%, respectively. They were 51.5%, 20.3%, and 28.2% for normal weight, and 30.0%, 18.3%, and 51.7% for overweight including obesity ($p < 0.05$). The normal and high EAT category distribution ratio values for underweight were 74.8% and 25.2%, respectively, 61.4% and 38.6% for normal weight, and 40.0% and 60.0% for overweight including obesity (p

< 0.05) (Table 4). The correlation coefficients between BMI, BSQ, and EAT were 0.393 and 0.172, respectively ($p < 0.05$) (Table 5).

DISCUSSION

The average BMI (20.13 kgm⁻²) of the subjects was lower than the average BMI (21.3 kgm⁻²) [3] of Caucasian female university students in South Africa, the average value (20.5 kgm⁻²) [14] of Europe female university students, and the average value (22.3 kgm⁻²) of American Caucasian female students [15]. As a result, 6.09% and 3.04% of subjects were overweight and obesity, respectively, whereas underweight comprised 21.16%, after classifying BMI using the criteria for adult subjects of the Asian of Korean Society for the Study of Obesity (2000). Although the prevalence rates of overweight female university students have increased from 6.7% to 10.0% in the past 15 years, the prevalence rate of obesity has been almost constantly maintained at 0.95% to 0.8% [9]. The prevalence ratios of overweight and obese Korean female university students investigated in this study were lower values than those of overweight (20.0%) and obese (9.6%) [16] young women (15-24 yr old) who participated in the South African Demographic and Health Survey. However, the obesity prevalence ratio was almost three times higher compared with that (8%overweight and 1% obese) [15] of

European students. These results occurred because the physical activities of Korean female university students are relatively insufficient, and they have unhealthy eating habits and a sedentary-type lifestyle [7].

As expected from previous studies [17-19], our results show that female students think their weight is higher than their actual weight, and there is no realistic perception of weight. The 34-item BSQ applied in this study investigates self-perception of appearance, and scores > 129 has been associated with bulimia nervosa cases, women who pay excessive attention to weight and appearance, those with deep dissatisfaction with their appearance, and patients with an eating disorder. In contrast, subjects with scores < 112 are satisfied with their appearance. As our results showed that 175 subjects (26.64%) scored high on the BSQ, they were largely unsatisfied with their appearance, despite normal weight and an average BMI of 21.14 kgm^{-2} . These women believed that their own weights were higher. In a similar study by Sciacca *et al.*, the average BMI of American students who perceived their own weight as overweight was 23.2 kgm^{-2} , whereas the average BMI was 20.4 kgm^{-2} in students who perceived that their own weight was normal [18]. Thus, American and Korean female students perceive their weight to much higher than the actual value. In contrast, the BMIs of students who recognize that they have normal weight were lower, suggesting that all underweight students recognize their weight as normal. This result means that underweight students do not want that their weight to increase and they prefer being underweight even if they could suffer negative health results. In addition, students with a normal weight do not require a weight loss program to normalize their weight.

Our average BSQ score (109.12 ± 30.51) was higher than scores ($85.0\sim 96.3$) [20,21] in previous foreign studies. In other words, Korean female university students have greater interest in their appearance than that of foreign female university students. They are also dissatisfied, and a higher BMI lead to more interest in their appearance. The finding that 56.16% of female university students were dissatisfied with their appearance though they have normal weight indicates that the perception of appearance by Korean female university students is significantly distorted, and that social pressure for a slim body more strongly affect them than women in foreign countries. Such a distorted perception of appearance and dissatisfaction with body shape can cause side effects due to excessive weight control [9], such as attempting to lose weight within a short time by force [22]. As shown in Table 4, the ratios of underweight, normal weight, and overweight including obese in the BSQ high category were 10.1%, 28.2%, and 51.7%, respectively, suggesting that

overweight students are the most dissatisfied with their appearance. However, such phenomenon means that the dissatisfaction for their own appearance is generalized in the inconsiderable ratio in the normal weight because the ratio that does not satisfy with their appearance among the female university students with normal weight takes 28.2%. All results on the oneself-perceived weight, the satisfaction for appearance, and the weight loss attempt pointed out that is necessary to focus on the establishment and the accept of the reasonable and individualized weight goals to compose the weight management program targeting the female students. EAT-26 scores were 10.6-15.4 in previous studies [4,19,23] from foreign countries, whereas our average EAT-26 score was 19.38 ± 10.77 . Such a result indicates that eating disorders are a noticeable problem in Korean female students. The living environment of the university is conducive to develop an eating disorder [24], and almost female students have experienced a chronic eating disorder problem [25]. Improper eating attitudes and behaviors can become life-long habits. Eating disorders are traditionally more common in middle-class Caucasian women [9]. However, the high risk for an eating disorder in Korean female university students occurs because they yearn for the body shape of female entertainers in the mass media, and they are influenced by society and a cultural atmosphere that prefers a thin body type. Thus, many female university students also diet, but these diet behaviors almost always follow inappropriate methods, and chronic diet behavior can affect eating attitude. Furthermore, these students have excess interest in their own appearance, resulting in a negative ego concept and an eating disorder [7]. Therefore, weight should be managed through a healthy diet and regular exercise.

We found significant positives correlations between BMI and the BSQ and between BMI and the EAT. This result indicates that a higher BMI leads to more dissatisfaction with appearance and increased prevalence of an eating disorder. The criteria for female university students to be satisfied with their appearance are closely associated with their weight. It is predicted that the incidence of eating disorders such as anorexia and bulimia will increase in Korean women.

CONCLUSION

The BMIs of Korean female university students were lower than those of European and American Caucasian women students, but dissatisfaction of Korean female university students with their appearance was higher than that of European and American students, suggesting that that suffered

more from an eating disorder. Excessive interest in appearance and wrong diet habits can cause a chronic eating disorder, and a negative self-concept can form. Therefore, incorrect habits in the early stages of life should be improved. Healthy behaviors can positively influence health as well as the social and economic burden of health-related service costs. Universities should organize a system to deal with student education, healthy eating campaigns, and mental health and medical services focusing on eating disorders and body image [15]. If a university student weight management program is developed and implemented, realistic goal weights, safe and healthy weight loss methods, causes of the yo-yo phenomenon, figure recognition, eating attitudes and behavior, self-concept, and physical activity should be included.

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