

## Eating Attitude and Weight Control Strategy in Korean College Men and Women

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**This study explored the eating attitudes, dieting habits, weight perception and exercise behavior of Korean women. Self-reported questionnaires were administered to 724 Korean college students. Compared to males, female students felt themselves overweight and dissatisfied with their body and desired to lose weight, although both groups were within the range of the national standard. Female students dieted more, while males exercised more. Eighteen percent of females showed disturbed eating behavior. The score for disturbed eating behavior was highly related to weight perception in the female students. These results suggest that Korean college women have a high prevalence of eating disturbances without having actual weight problems. A majority of the women desired to lose weight, which may be due to the misperception of their body weight and fatness. However, they did not adopt appropriate strategies such as doing regular exercise to reduce their body weight.**

**Key words :** dieting behavior, eating disturbance, exercise behavior, weight perception

### INTRODUCTION

It is generally accepted that eating disorders such as anorexia nervosa, bulimia and binge eating are determined by multi-dimensional factors<sup>1-3</sup>. Regarding racial and cultural aspects, recent studies reported that eating problems are not limited to western nations but are spreading in developing countries.<sup>4,5</sup> Although the prevalence of eating disorders in developing and/or non-western societies is still thought to be lower than that in industrialized nations<sup>3</sup>, cross cultural studies on eating disorders and body image are of epidemiological interest.<sup>6,7</sup>

In terms of traditional perceptions in some Asian cultures, a man is respected when he has a larger body while a woman is looked upon favorably if she is petite.<sup>8</sup> As some Asian countries have recently become more developed economically, the body size of both men and women has changed. However, it has been suggested that a slim body is still desirable in some Asian cultures<sup>4,9</sup> as in their western counterparts.<sup>10</sup>

Although Asian women are relatively small and thin compared to their western counterparts, Asians show a rate of eating problems that is comparable to that in western countries. Recent studies revealed an increasing

rate of eating disorders in Asian sub-populations and societies.<sup>11</sup> It was interpreted that this may be due to a rapid change in culture and values.<sup>12</sup>

Over the past 15 years, Korean society has moved dramatically toward a more western-style society. A thin body represents an ideal and is thought to be attractive in Korea, especially for women. The abundant availability of food and an increasing number of fast food restaurants may have encouraged the consumption of more food than required. On the other hand, the increase in the number of athletic facilities with high-tech equipment and the growth of commercial advertisements for these facilities has encouraged Koreans to exercise more. Collectively, this social environment may lead to confusion as to body image, eating behavior and exercise patterns.<sup>13-15</sup>

Studies dealing with Asians have reported a prevalence of eating disorders.<sup>16</sup> However, to our knowledge, no studies are available regarding weight control behaviors relative to eating behavior and weight concerns among young Koreans. Since eating disturbances occur predominantly in females, and body image and weight concerns are major issues determining eating disturbances in college women,<sup>14,17</sup> we selected Korean college students for this study. It is unclear whether Korean young women have a tendency toward disordered eating that is comparable to that of their western counterparts

and/or Asians who reside in the same cultural boundary.

Therefore, the purpose of this study was to explore the eating attitudes, the weight concerns and exercise behaviors of Korean college students. In addition, the relationship between weight control strategies such as dieting and/or exercise, and perceived weight problems was investigated.

## METHODS

### Subjects

The subjects were 724 college undergraduates from four universities in the Seoul metropolitan area. All of them were born and raised in Korea and enrolled in health-related classes that were offered in the fall semester of 2001. Subjects older than 29 years old ( $n=29$ ) were dropped from the data analyses. All subjects were informed that the information obtained would be used only for this study. Their participation was voluntary and this study conformed to the guidelines of the University Human Research Review Board.

### Procedures

A three-page questionnaire was administered to each subject. The questionnaire contained an appropriately translated Body Dissatisfaction Index (BDI), one of the original eight subscales from the Eating Disorder Inventory,<sup>18)</sup> and Eating Attitudes Test (EAT26), which was constructed to screen for pathogenic eating disorder.<sup>19)</sup> The EAT26 was employed since this is widely used and can screen for eating problems. Using this instrument, a score of 20 and above was considered as a 'high score' and thus an indicator of possible eating disorders.

The questionnaire also included a battery of other questions such as 1) demographic characteristics (age, height, and weight), 2) dieting habit and exercise behaviors for weight control strategies, and 3) body concerns. For body concerns, weight perception was rated on a seven-point scale ranging from 1, extremely underweight, to 7, extremely overweight. Body shape satisfaction was rated on a seven-point scale from 1, very much satisfied, to 7, very much dissatisfied. Perceived ratings on body shape were determined using a five-point scale from 1, ranked in the top 10 percent, to 5, ranked in the bottom 10 percent. Reasons for dieting and exercise were evaluated using 10 items corresponding to very important, important, and not important.

### Statistical analyses

Descriptive data analyses were expressed as mean and standard deviation. Comparisons between sexes were made utilizing ANOVA, and the Mann-Whitney Test

was employed for non-parametric evaluations. For examining inter-variable relationships, the Pearson Correlation Coefficient was utilized. Statistical significance was considered when  $P < 0.05$ .

## RESULTS

The subjects' demographic characteristics are shown in Table 1. All variables were significantly higher in male than female students. In comparison to the Korean National Standard, our sample of both male and female students was slightly taller than the standard. While the male students virtually did not want to change their body weight as a group, the female students desired to lose an average of approximately 4 kg.

**Table 1.** Subject's Demographic Characteristics and the Korean National Standard

	Male (n=329)	Female (n=357)	Korean National Standard <sup>1</sup>	
			Men	Women
Age(yrs)	22.6±2.9**	21.2±1.8	20-24	20-24
Weight(kg)	65.8±8.8**	51.6±5.9	65.6	51.7
Height(cm)	174.1±5.1**	162.4±4.6	171.3	160.2
BMI(kg/m <sup>2</sup> )	21.7±2.5**	19.6±1.9	22.4	20.1
dWt(kg)	66.4±6.3**	47.7±4.2		

Values are mean±S.D. BMI = Body Mass Index. dWt = desired body weight. \*\* significant at  $P < 0.001$  (ANOVA) between male and female.

<sup>1</sup>according to the National Survey of Physical Anthropometry for Standard, Korea Research Institute of Standards and Science, 1997.

### BDI and EAT26

Female students scored significantly higher than males on both the BDI and EAT26 (Table 2). When the 'high scorer' for each parameter was separated from the total respondents, a significant difference in percentage of the total between the sexes was found in both scales.

**Table 2.** BDI and EAT26 Scores in Male and Female Students

	Male	Female
BDI total**	7.5±5.8 (n=333)	13.8±6.6 (n=364)
BDI≥20‡	22.1±1.6 (n=15, 4.5%)	21.9±1.7 (n=91, 25.0%)
EAT26 total**	7.5±4.3 (n=333)	12.6±7.6 (n=364)
EAT26≥20‡	23.6±2.5 (n=9, 2.7%)	25.2±4.7 (n=65, 17.9%)

Values are mean±S.D.

\*\*significant at  $P < 0.001$  (ANOVA) between male and female.

‡ significant at  $P < 0.001$  between male and female for percentage.

### Body weight and fatness perception

In terms of fatness, 93.7% ( $n=340$ ) of the female respondents thought that at least one part of their body was fat, while only half of the male students (53.9%,  $n=179$ ) responded similarly ( $P < 0.001$ ; data not shown on Table). In evaluating their body, 27.2% ( $n=89$ ) of the

male respondents felt that they were in the top 30% of a comparable age group while only 9.9% (n=35) of the females felt this way ( $P < 0.001$ ). Approximately half of the male students (45.5%, n=151) were satisfied with their bodies, but only 25% (n=90) of the females were ( $P < 0.001$ ).

Regarding body weight variation, weight loss of 1 kg was positively acknowledged by the female students (80.7%, n=293) while weight gain of 1 kg was perceived negatively by the women (80.2%, n=291). In contrast, a 1 kg weight loss was not viewed positively among the male students. A total of 37.7% (n=125) of the males responded that they positively perceived 1 kg of weight gain.

The desire to change body weight in the males was strongly influenced by the following factors: 'to improve fitness' (50.5%, n=164), 'to be healthy' (51.5%, n= 168), 'to be physically attractive' (38.2%, n=124), and 'for my own satisfaction' (70.7%, n= 226) (data not shown on Table). On the other hand, the primary reasons why the women wanted to change their body weight were: 'to be physically attractive' (43.7%, n=156) and 'for my own satisfaction' (88.2%, n=313).

### Dieting behavior

While more than half of the female students had dieted, only one fifth of the male respondents reported ever having done so (Table 3). However, among all the dieting students, the usual absolute magnitude of the weight loss was greater in male than female students. Converting these weight variations into relative terms, male students lost 5.68% of their body weight (from weight before diet, 73.0±8.8 kg, n=60) while female students lost 5.53% of their body weight (from weight before diet, 53.0±5.5 kg, n=194).

**Table 3.** Dieting Habit

	Male (n=325)	Female (n=354)
Ever dieted?	Yes 19.4% (n=63) <sup>†</sup>	56.6% (n=204)
	No 80.6% (n=262)	42.4% (n=150)
Average weight loss (Kg)	4.2±3.6 (n=60)**	2.9±1.8 (n=194)
Maximal weight loss (Kg)	6.3±4.3 (n=61)**	4.1±2.4 (n=179)
How many times ever dieted	2.5±2.7 (n=59)*	3.8±2.9 (n=184)

Values are mean±S.D.

\*significant at  $P < 0.005$  (ANOVA) between male and female.

\*\*significant at  $P < 0.001$  (ANOVA) between male and female.

<sup>†</sup> significant at  $P < 0.001$  (Mann-Whitney Test) between male and female.

### Exercise behavior

More than 75% of the male students exercised regularly, while 38% of the female students reported doing so ( $P < 0.001$ ). Those who exercised, regardless of gender, reported that they did so about 3.5 times per week (Table 4). However, male students exercised longer

in a session than female students did ( $P < 0.001$ ). Both male (57%, n=139) and female (58.5%, n= 76) students exercised somewhat hard, but the general exercise intensity was higher for males than females ( $P < 0.001$ : data not shown on Table).

**Table 4.** Exercise Behavior

	Male (n=323)	Female (n=355)
Exercise regularly	Yes 78.6%(n=254) <sup>†</sup>	38.0%(n=135)
	No 21.4%(n=69)	62.0%(n=220)
Exercise frequency per week	3.5±1.8(n=241)	3.5±1.9(n=129)
Exercise duration per session (min)	62±45(n=241)**	43±42(n=129)

Values are mean±S.D.

\*\*significant at  $P < 0.001$  (ANOVA) between male and female.

<sup>†</sup> significant at  $P < 0.001$  (Mann-Whitney Test) between male and female.

The motivating force to exercise in the males was 'to improve fitness' (57.6%, n=141). On the other hand, 'to lose weight and fat' (53.2%, n=67) was the major reason to exercise for the females.

When female students who scored 20 and above for EAT26 were selected (n=65), half of them (n=30) exercised regularly. No differences were found in exercise frequency and exercise duration per session between those who scored 20 and above and those who scored less than 20 in EAT26 (data not shown on Table).

### Desire to change body weight

Among the male students, the portion of those who desired to gain weight was slightly higher than those who wanted to lose weight. However, the magnitude of weight gain or weight loss was similar (Table 5). On the other hand, female students desired to lose an average of 4.8 kg.

**Table 5.** Desire to Change Body Weight and Weight Perception

	Male (n=323)	Female (n=292)
Amount of Wt gain	5.3±3.2 (n=163, 50.5%)	2.6±1.2 (n=23, 7.9%)
Maintain	0.0±0.0 (n=31, 9.6%)	0.0±0.0 (n=12, 4.1%)
Amount of Wt loss	5.3±3.8 (n=129, 39.9%)	4.8±2.8 (n=257, 88%)

Values are mean±S.D.

In those females who desired to lose weight, 64.1% (n=159) responded that they have been on a diet. In addition, 40.2% (n=101) of the women who desired to lose weight were currently engaged in regular exercise. The percentage of females who had undertaken dieting in combination with regular exercise was 27.0% (n=67).

### Weight perception

The results of the seven-point scales used to determine weight perception are shown in Table 6. Regarding their

**Table 6.** Responses of Weight Perception

	Male (n=331)				Female (n=360)			
	Wt	$\Delta$ Wt	%	n	Wt	$\Delta$ Wt	%	n
Extremely Underweight	51.2 $\pm$ 4.3	-12.2 $\pm$ 3.1	1.5	5	41.0	-4.0	0.3	1
Very Underweight	57.2 $\pm$ 4.8	- 7.4 $\pm$ 3.9	7.3	24	48.8 $\pm$ 4.3	3.0 $\pm$ 2.2	1.1	4
Slightly Underweight	61.5 $\pm$ 5.9	- 4.9 $\pm$ 3.4	26.6	88	46.0 $\pm$ 4.5	-0.5 $\pm$ 2.2	12.8	46
Average	65.2 $\pm$ 6.3	- 0.2 $\pm$ 3.3	37.8	125	49.5 $\pm$ 3.8	2.7 $\pm$ 1.6	30.6	110
Slight Overweight	72.4 $\pm$ 7.8	4.4 $\pm$ 3.9	18.4	61	53.4 $\pm$ 5.1	5.4 $\pm$ 2.1	35.6	128
Very Overweight	77.3 $\pm$ 7.2	8.0 $\pm$ 4.2	6.6	22	56.4 $\pm$ 5.2	7.3 $\pm$ 3.1	16.1	58
Extremely Overweight	81.0 $\pm$ 11.1	12.2 $\pm$ 5.5	1.8	6	62.3 $\pm$ 3.9	10.1 $\pm$ 3.9	3.6	13

Values are mean $\pm$ S.D.  $\Delta$ Wt = current weight - desired weight

† significant at  $P < 0.001$  (Mann-Whitney Test) between male and female in distribution.

current body weight, 35.3% and 26.9% of the males and 14.2% and 55.3% of the females responded that they were below and above the average body weight, respectively ( $P < 0.001$ ). The distribution of responses between the sexes was significantly different. Male students who perceived themselves as either overweight or underweight wanted to lose and gain weight, respectively. However, female students desired to lose weight although they perceived themselves as being underweight.

#### Interrelationships between selected variables

The Pearson Correlation Coefficients revealed that Body Mass Index (BMI) was highly related to BDI in both sexes (Table 7). However, BMI was significantly related to EAT26 only in the female students. The magnitude of desired body weight change ( $\Delta$ Wt; current weight-desired weight) highly correlated to BDI, BMI, and EAT26 in the females. Only BDI and BMI were significantly correlated with Wt in the males. Weight perception was highly correlated with other variables in the females, but it did not correlate with EAT26 in the males.

**Table 7.** Pearson Correlation Coefficient between Selected Variables

	Male(n=323)				Female(n=292)			
	BMI	BDI	EAT26	$\Delta$ Wt	BMI	BDI	EAT26	$\Delta$ Wt
BDI	0.416**				0.490**			
EAT26	0.062	0.233**			0.194**	0.369**		
$\Delta$ Wt	0.795**	0.419**	0.060		0.810**	0.528**	0.233**	
pWt	0.782**	0.392**	0.037	0.800**	0.735**	0.582**	0.278**	0.744**

pWt = weight perception

\*\* significant at  $P < 0.001$ .

## DISCUSSION

The major finding of this study was that, according to the EAT26 score, approximately 18% of the Korean college women who responded to a self-reported questionnaire were exposed to a possible eating disturbance.

This eating disturbance was much more common in young women than men, as previously reported in western populations.<sup>20</sup> Several studies have reported various ranges of eating disorders in the general female population as 8-12%.<sup>21,22</sup>

The prevalence of eating disturbances in Korean college women may not necessarily mean they could be classified as patients with an eating disorder. Other diagnostic criteria may be necessary to identify clinical eating disorders more clearly. However, our data may reflect a high incidence of distorted eating behaviors in the Korean female college community.

The high rate of eating disturbances observed in our study may be due to a preoccupation with the perception of body fatness. Previous studies<sup>21,23</sup> proposed that a 'feeling of fatness' was the one significant psychological independent contributor determining an eating behavior. Regardless of the national standard, Korean young women certainly have been influenced by some factors which led to their perception of being fatter than normal. Regardless of the causes, this perception was obvious in our subjects, since they maintained a low BMI and an extreme weight was rare. The vast majority of female students had an average weight, but more than half of the respondents viewed themselves as overweight. And this was consistent with a previous study, in which Korean adolescent girls were investigated.<sup>13</sup>

Using the western standard, the normal range of BMI would be 20-25.<sup>24</sup> In our sample, however, only three subjects had a BMI higher than 25. Nevertheless, the average of all EAT26 scores was relatively higher than other reports. It is possible that the Korean young women in our study compared themselves with a 'thin' standard rather than an actual standard. It has been previously documented that women were more likely to judge themselves as fat, although by objective standards they were not.<sup>25</sup> In addition, women are generally more dissatisfied with their appearance than men.<sup>26,27</sup> These tendencies were confirmed in the present population.

As our data showed, although to a minimal degree, the desire to lose weight by Korean young women was

obvious without the existence of actual weight problems.<sup>13)</sup> This tendency was not exclusive to Korean college students. In a previous study that screened western populations, comparably aged women showed a similar tendency.<sup>28)</sup>

One of the aims of this study was to examine the relationship between eating attitudes and weight control strategies in Korean female college students. The results of this study indicate that the amount of weight loss and weight gain desired, and the BDI scores for both male and female students, were significantly and positively related to BMI. However, only female students were likely to have a high score on the EAT26, and the score was highly correlated to both BMI and BDI. Collectively, these findings suggest that female students are more afflicted with a restricted eating attitude, which supports the findings of a previous report.<sup>13)</sup> In contrast, the male students did not modify their eating behavior based on their body weight, body image and perception. The strong relationship between body dissatisfaction and weight preoccupation was previously reported in a non-clinical female population,<sup>13,23,29)</sup> and those findings were consistent with the present study.

An additional purpose of this study was to clarify, in terms of eating behavior, whether Korean young women have a tendency similar to that of their counterparts of a same cultural background. In a previous study using an Asian population, a significant number of women reported higher body dissatisfaction scores than men.<sup>8)</sup> In that study, women reported more dieting than men and men reported exercising more than women. These observations were consistent with the present study.

Excessive physical activity in the pathogenesis of eating disorders was examined in some studies, but the results were equivocal.<sup>23,29-34)</sup> One of the difficulties in evaluating the relationship between eating disorders and excessive exercise is that the definition of excessive activity was not clear and consistent. However, without defining excessive exercise and based on the criteria cut-off point of 20 in the EAT26, our data did not reveal any relationship. The present study suggests that Korean young women may not rely appropriately on exercise for controlling their weight. Instead, they may only rely on a restricted diet for controlling it.

In conclusion, this study demonstrated a high prevalence of eating disturbances in Korean female college students. Although they are relatively small and thin compared to their western counterparts, Korean female college students still desire to lose weight and perceive themselves as fat. This desire and the perception of body weight may modify their eating behavior. However, their strategies to control body weight, such as regular exercise, did not seem to be appropriately practiced.

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