

## Studies on Self-Perceived Health and Appearance, Health-Related Lifestyles and Dietary Behaviors of Korean College Students Attending Web Class

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### ABSTRACT

The purpose of this study was to investigate self-perception and practices of health and appearance, health-related lifestyles and dietary behaviors of college students(137 male, 115 female) attending web class via the Internet. This cross-sectional survey was conducted by a self-administered questionnaire and data was analyzed by SPSS program. The average height, weight and BMI of the male and female college students were 174.4cm, 67.8kg, 22.3kg/m<sup>2</sup> and 162.3cm, 52.1kg, 19.8kg/m<sup>2</sup>, respectively. Male college students perceived their health statuses significantly better compared to female students. As for self-evaluation of anemia, female college students perceived significantly more anemia symptoms compared to male college students. Female college students perceived their body image to be obese compared to male college students. Underweight college students perceived significantly less healthy statuses, more anemia symptoms, and worse hair conditions compared to other college students. The rate of male students who exercise was significantly higher compared to that of female students. Male students reported significantly more smoking and drinking of alcohol compared to female students. The rate of female college students skipping meals was significantly higher than that of male college students. Frequency of eating out in female college students was significantly higher compared to that in male students. These results may provide some basic information in developing a nutrition education program for Korean college students using Internet. (*J Community Nutrition* 3(2) : 77~86, 2001)

KEY WORDS : college students · appearance · health-related lifestyle · dietary behavior · Internet.

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### Introduction

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It is important for college students to promote health and reduce the risk of chronic diseases by optimal nutrition through proper dietary behaviors. However, recently, Korean college students have shown inappropriate dietary behaviors such as skipped meals, frequent snacks, frequent consumption of fast foods, overeating, eating disorders, and excessive drinking and smoking (Choi et al. 2000 ; Kwon & Chang 2000 ; Lee et al. 2001) Korean college students may live irregular dietary lifestyles unconsidered class timetables and changes in rhythm of life after entering college(Kim et al. 1996).

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It was reported that especially female college students with extreme weight control attempts for thinner body image skipped meals and showed eating disorders(Chang & Kwon 2001 ; Lee et al. 2001).

Various factors, such as residence and nutrition education, were related to food selection and dietary behaviors of college students. It was reported that college students living at home with their parents showed better nutritive conditions than those who living in a boarding houses with self-cooking, or in a dormitory (Kim et al. 1996 ; Lee et al. 2000). Also it was reported that nutrition courses, helped college students to change their dietary behaviors, nutritional attitudes, and nutritional knowledge(Lee et al. 1999). It was reported that college students selected foods for convenience rather than nutrition(Kwon & Chang 2000 ; Lee et al. 2000). In the United States, nutritional knowledge scores of nutrition-educated college students were significantly higher compared to less educated

college students (Marjorie et al. 1974). As for major sources of nutrition information, female college students in Seoul reported Home Economics class during middle to high school, mass media, and magazines for cooking respectively (Kim et al. 1999).

Although college students are generally preoccupied with their appearances, their perceptions and practices for appearances were not reported yet. Therefore, the purpose of this study was to investigate self-perceptions and practices of health and appearances, health-related lifestyles and dietary behaviors of college students attending web classes and to provide some basic information in developing a nutrition education program for college students using the Internet.

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## Subjects and Methods

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### 1. Subjects

The subjects were 300 college students attending a nutrition and health-related web class at a cyber university. This survey was carried out using a self-administered questionnaire from November 1 to 15, 1999. For statistical analysis, 252 students (male 137, female 115) completed a questionnaire (collection rate : 84%).

### 2. Questionnaire

The questionnaire included items about demographic characteristics, socioeconomic factors, self-perception and practices of health and appearance, health-related lifestyle, and dietary behavior. Items about demographic characteristics included age, sex, major and residence. Items about socioeconomic factors included household income, pocket money and ratio of food expense to pocket money. Items about self-perception and practices of health and appearances included health status, anemia, body image, size of face, states of hair and skin, use of accessories, and products used for appearance. Items about health-related lifestyle included exercise, smoking and drinking, and number of cigarettes per day. Items about dietary behavior included self-recognition of eating habit problems such as overeating, unbalanced meals, skipping meals, rate of eating and eating out.

### 3. Anthropometric measurements

The height and weight were reported by the subjec-

ts. BMI was calculated by body weight in kilograms divided by square of height in meters. BMI was classified as follows : less than 18.5 underweight, 18.5–24.9 normal, 25.0–29.9 overweight, more than 30.0 obese (Ministry of Health and Welfare 1999).

### 4. Statistical analysis

The statistical analysis was conducted using SPSS 10.0 program. Frequency counts(%), mean, standard deviation were calculated for all variables. Student's t-test and Chi-square test were used to determine statistical significance.

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## Results and Discussion

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### 1. General characteristics of the subjects

General characteristics of the subjects are shown in Table 1. Average ages of male and female college students were 24.3 and 23.1 years, respectively. As for residence type, the rate of female college students living at home with their parents was significantly higher compared to that of male college students ( $p < 0.001$ ), which was similar to the previous result conducted at a university located in Seoul (Chang et al. 1988). It was reported previously that male college students lived in a boarding house with self-cooking (21.9%), home with parents (58.4%), in dormitory (5.1%) and female college students at home with parents (85.2%), in a boarding house with self-cooking (10.4%), a relative's home (1.7%) respectively (Kim et al. 1996). However, this result was different from that of a previous study in which the rate of male college students living at home with their parents was significantly higher compared to that of female college students (Lee et al. 1980). As for their major subjects, the rate of female students at the College of Liberal Arts was significantly higher compared to that of male students ( $p < 0.001$ ). However, the rate of male students at the College of Engineering was significantly higher compared to that of female students ( $p < 0.001$ ). As for daily length of use of a computer, there was no significant difference between male and female college students. However, there was a significant difference in main area of using computers by male and female college students ( $p < 0.001$ ). Male college students used computers for information

**Table 1.** General characteristics of the subjects by sex

	Male (n = 137)	Female (n = 115)	Significance
Age(years)	24.3 ± 2.5 <sup>1)</sup>	23.1 ± 3.5	p < 0.001*** <sup>2)</sup>
Residence			
Home w/parents	80(58.4) <sup>3)</sup>	98(85.2)	p < 0.001*** <sup>4)</sup>
Boarding w/meals	15(10.9)	1( 0.9)	
Boarding w/self-cooking	30(21.9)	12(10.4)	
Dormitory or relative's home	7( 5.1)	2( 1.7)	
Others	5( 3.6)	2( 1.7)	
Pocket money(10,000 won/month)			
< 5	1( 0.7)	1( 0.9)	p=0.660 <sup>NS5)</sup>
5 - 8	2( 1.5)	4( 3.5)	
8 - 11	3( 2.2)	4( 3.5)	
11 - 15	21(15.3)	22(19.1)	
15 ≥	110(80.3)	84(73.0)	
Food expense rate to pocket money(%)			
< 20	13( 9.5)	10( 8.7)	p = 0.863 <sup>NS</sup>
20 - 40	47(34.3)	47(40.9)	
40 - 60	53(38.7)	41(35.7)	
60 - 80	22(16.1)	16(13.9)	
80 - 100	2( 1.5)	1( 0.9)	
Major			
College of liberal arts	32(23.4)	59(51.3)	p < 0.001***
College of science	25(18.2)	39(33.9)	
College of engineering	62(45.3)	17(14.8)	
College of arts	18(13.1)	0( 0.0)	
Duration of using computer			
< 1 hour	36(26.5)	41(35.7)	p = 0.209 <sup>NS</sup>
< 1 - 3 hours	67(49.3)	55(47.8)	
< 3 - 5 hours	18(13.2)	9( 7.8)	
< 5 - 7 hours	9( 6.6)	3( 2.6)	
≥ 7 hours	6( 4.4)	7( 6.1)	
Main area of using computer			
Information search	65(47.8)	70(60.9)	p < 0.001***
Games	43(31.6)	5( 4.3)	
Chatting, e-mail	5( 3.7)	10( 8.7)	
Linguistic education	5( 3.7)	10( 8.7)	
Others	18(13.2)	20(17.4)	
1) Mean ± S.D	2) *** : p < 0.001 by Student's t-test		
3) N(%)	4) *** : p < 0.001 by $\chi^2$ -test		
5) NS : Not significant			

search(47.8%) and games(31.6%) and female college students for information search(60.9%), linguistic education(8.7%) and chatting and e-mail(8.7%). On the other hand, there was no significant difference in pocket money, food expense rate to pocket money, length of use of computers between male and female students, which was similar to a previous result conducted in Incheon(Lee et al. 2001).

## 2. Anthropometric characteristics of the subjects

Anthropometric characteristics of the subjects are shown in Table 2. The average height, weight and BMI of the male and female college students were 174.4cm, 67.8kg, 22.3kg/m<sup>2</sup> and 162.3cm, 52.1kg, 19.8kg/m<sup>2</sup>, respectively. These results were similar to the previous results showing that the mean BMI of male college students was 22.0kg/m<sup>2</sup> and that of female college students was 20.3kg/m<sup>2</sup>(Lee et al. 1996). However the average height and weight of female college students were higher and the average BMI was lower compared to previous results(Kim et al. 1997).

The average height and weight of college students were compared with the Korean Standard for age(male college student : height 174cm, weight 67kg, female college students : height 161cm, weight 54kg)(Korean Nutrition Society 2000). The average height of college students was similar compared to the Korean standard for age. Also the average weight of male college students was similar compared to the Korean standard for age. However, the average weight of female college students was lower compared to the Korean standard for age. The average BMI of male college students was 22.3kg/m<sup>2</sup> and that of female college students was 19.8kg/m<sup>2</sup>, which were in normal range by following classification of BMI, which is less than 18.5 underweight, 18.5 - 22.9 normal, 23.0 - 24.9 overweight, 25.0 - 29.9 obese I, 30.0 - 34.9 obese II, more than 35.0 obese III(Korean Society of Obesity 1997).

**Table 2.** Anthropometric characteristics of the subjects by sex

	Male(n = 137)	Female(n = 115)	Significance
Height(cm)	174.40 ± 4.70 <sup>1)</sup>	162.31 ± 4.51	p < 0.001*** <sup>2)</sup>
Weight(kg)	67.76 ± 8.04	52.09 ± 5.91	p < 0.001***
BMI(kg/m <sup>2</sup> ) <sup>3)</sup>	22.26 ± 2.28	19.75 ± 2.28	p < 0.001***
1) Mean ± S.D	2) *** : p < 0.001 by Student's t-test		
3) BMI(Body mass index) = Weight(kg) ÷ Height(m) <sup>2</sup>			

**Table 3.** Self-perceptions and practices of health and appearance by sex

	Male (n = 137)	Female (n = 115)	Significance
<b>Self-reported health status</b>			
Very good	20(14.6)	6( 5.2)	p = 0.006***1)
Good	46(33.6)	28(24.3)	
Moderate	60(43.8)	59(51.3)	
Poor	9( 6.6)	20(17.4)	
Very poor	2( 1.5)	2( 1.7)	
<b>Self-evaluated anemia</b>			
Yes	28(20.4)	68(59.1)	p < 0.001***
No	109(79.6)	47(40.9)	
<b>Concern about appearance</b>			
Very much	12( 8.8)	9( 7.8)	p = 0.852 <sup>NS2)</sup>
Much	66(48.2)	61(53.0)	
Normal	51(37.2)	37(32.2)	
Little	6( 4.4)	7( 6.1)	
None	2( 1.5)	1( 0.9)	
<b>Self-perception of body image</b>			
Very fat	1( 0.7)	9( 7.8)	p = 0.002**
Little fat	24(17.5)	35(30.4)	
Moderate	71(51.8)	49(42.6)	
Little thin	35(25.5)	17(14.8)	
Very thin	6( 4.4)	5( 4.3)	
<b>Self-reported hair status</b>			
Very good	17(12.4)	17(14.8)	p = 0.323 <sup>NS</sup>
Good	27(19.7)	34(29.6)	
Moderate	51(37.2)	35(30.4)	
Poor	37(27.0)	24(20.9)	
Very poor	5( 3.6)	5( 4.3)	
<b>Self-reported skin status</b>			
Very good	9( 6.6)	11( 9.6)	p = 0.094 <sup>NS</sup>
Good	35(25.5)	40(34.8)	
Moderate	47(34.3)	22(19.1)	
Poor	40(29.2)	36(31.3)	
Very poor	6( 4.4)	6( 5.2)	
<b>Application of make-up</b>			
None	61(44.9)	0( 0.0)	p < 0.001***
Only facial cream	72(52.9)	30(26.1)	
Facial cream + shade	1( 0.7)	57(49.6)	
Only perfume	2( 1.5)	2( 1.7)	
Facial cream + shade + perfume	0( 0.0)	26(22.6)	
<b>Use of accessories</b>			
None	93(68.4)	19(16.5)	p < 0.001***
Necklace	16(11.8)	12(10.4)	
Ring	16(11.8)	16(13.9)	
Earing	0( 0.0)	17(14.8)	
More or combination of above items	11( 8.1)	51(44.3)	

**Table 3.** Continued

	Male (n = 137)	Female (n = 115)	Significance
<b>Use of products for appearance</b>			
None	29(21.3)	15(13.0)	p < 0.001***
Hair gel	80(58.8)	6( 5.2)	
Soap	15(11.0)	62(53.9)	
Dietetic supplies	0( 0.0)	1( 0.9)	
More or combination of above items	12( 8.8)	31(27.0)	

1) \*\* : p < 0.01, \*\*\* : p < 0.001 by  $\chi^2$ -test

2) NS : Not significant

### 3. Self-perception and practices of health and appearance

#### 1) Sex

Self-perception and practices of health and appearance of the subjects by sex are shown in Table 3. Male college students perceived their health status significantly better compared to female students (p < 0.01). Male college students reported their health status as moderate (43.8%), good (33.6%), very good (14.6%), poor (6.6%), very poor (1.5%) and female college students reported their health status as moderate (51.3%), good (24.3%), poor (17.4%), very good (5.2%), very poor (1.7%). This result was different from that of a previous study in which female college students perceived their health status better compared to male students (Lee et al. 1999). In a previous study, there was no significant difference in self-reported health status between male and female college students, but most of the students reported that they feel healthy (Song 1998). As for self-evaluation of anemia, female college students perceived significantly more anemia symptoms compared to male college students (p < 0.001). Low intake of iron was of special concern for female college students in the child-bearing age when loss of menstrual blood occurred (Kwon & Chang 2000). It was reported that average menstrual blood of healthy child-bearing females in Korea is 10.7ml/day, 1ml of blood includes 0.5mg of iron and the female loses 15mg iron/month and 0.05mg iron/day (Kim et al. 2000). For that reason, female college students may perceive significantly more anemia symptoms compared to male college students. It was reported that female college students took iron or vitamin C supplements more than

male college students for their health(Lee et al. 1990 ; Cheong et al. 2001). Regarding concerns about appearance, there was no significant difference between male and female students.

Self-perception of body image in female college students was significantly different between male and female college students( $p < 0.01$ ). Female college students perceived their body image to be fatter compared to male college students( $p < 0.01$ ). Regarding self-perception states of hair and skin, there was no significant difference between male and female college students. In a previous study, eye and skin statuses of the college students positively correlated with instant food intake(Chang et al. 1988). All of the female college students reported applying make-up, 55.1% of male college students reported applying make-up, which showed a significant difference( $p < 0.001$ ). As for the use of accessories, 68.4% of male college students did not use any accessories and 83.5% of female college students used accessories, which showed a significant difference( $p < 0.001$ ). As for products used for appearance, there was a significant difference between male and female college students( $p < 0.001$ ). Male college students preferred hair gel and female college students used soap.

## 2) BMI

Self-perceptions of health and appearance by BMI are shown in Table 4. BMI was classified as less than 18.5 underweight, 18.5 – 24.9 normal, 25.0 – 29.9 overweight, more than 30.0 obese(Ministry of Health and Welfare 1999). As for self-perception of health status, underweight college students were perceived significantly unhealthy compared to other college students ( $p < 0.05$ ). As for self-evaluated anemia, underweight college students were perceived significantly with more anemia symptoms compared to other college students( $p < 0.001$ ).

There was a significant difference in self-perception of body image among groups divided by BMI( $p < 0.001$ ). In male and female college students, 35.1% of the underweight college students perceived their body image as normal or little fat, which showed that college students preferred a thin body image. In this study, self-perception of body image in male and female col-

lege students was similar compared to data in previous studies(Kim 1991 ; Lee et al. 2001). Therefore, it is necessary for college students to perceive body images properly. As for self-reported size of face, overweight or obese college students were perceived as significantly bigger compared to normal or underweight college students( $p < 0.05$ ). Also as for self-reported state of hair, underweight college student were perceived significantly worse compared to other college students( $p < 0.01$ ). Therefore, underweight college students were perceived unhealthy, had more anemia symptoms and worse state of hair compared to normal, overweight or obese college students. There was no significant difference in practices for health and appearance among groups divided by BMI(data is not shown).

## 4. Health-related lifestyles of subjects by sex

Health-related lifestyles of the subjects by sex is shown in Table 5. The rate of male students who exercised was significantly higher compared to that of female students( $p < 0.001$ ). This result was similar to the previous result by Kwon & Chang(2000). As for smoking and alcohol-drinking statuses, male students reported significantly more smoking and drinking of alcohol compared to female students( $p < 0.001$ ). This result was similar to the result of a previous study conducted at a university located in Incheon(You & Chang 1995) and in Seoul(Lee et al. 1980). It may be that female college students evaded an answer for undesirable behaviors. However, the rate of male students who had both smoking and drinking of alcohol tend to have decreased since 1995. This result may be due to increased concern about health by college students.<sup>21</sup> As for the number of cigarettes smoked, male students answered none(54.0%), less than 1 packet(24.8%), less than 1/2 packet(10.9%), less than 2 packets(10.2%), and female students none(93.9%), less than 1/2 packet(3.5%), less than 1 packet(1.7%), more than 2 packets(0.9%). There was a significant difference in number of cigarettes smoked between male and female college students( $p < 0.001$ ), which was similar to the result of a previous study(Kwon & Chang 2000). Therefore, nutrition education via the internet is necessary in order to encourage college students to maintain health.

**Table 4.** Self-perception of health and appearance by BMI of the students N(%)

	Underweight(n = 37)	Normal(n = 162)	Overweight(n = 36)	Obese <sup>1)</sup> (n = 17)	Significance
<b>Self-reported health status</b>					
Very good	1( 2.7)	17(10.5)	3( 8.3)	5(29.4)	p = 0.050 <sup>2)</sup>
Good	11(29.7)	41(25.3)	14(38.9)	8(47.1)	
Moderate	18(48.6)	82(50.6)	16(44.4)	3(17.6)	
Poor	5(13.5)	20(12.3)	3( 8.3)	1( 5.9)	
Very poor	2( 5.4)	2( 1.2)	0( 0.0)	0( 0.0)	
<b>Self-evaluated anemia</b>					
Yes	20(54.1)	71(43.8)	4(11.1)	1( 5.9)	p < 0.001 <sup>***</sup>
No	17(45.9)	91(56.2)	32(88.9)	16(94.1)	
<b>Perception of body image</b>					
Very fat	0( 0.0)	6( 3.7)	3( 8.3)	1( 5.9)	p < 0.001 <sup>***</sup>
Little fat	1( 2.7)	33(20.4)	12(33.3)	13(76.5)	
Moderate	12(32.4)	85(52.5)	20(55.6)	3(17.6)	
Little thin	15(40.5)	36(22.2)	1( 2.8)	0( 0.0)	
Very thin	9(24.3)	2( 1.2)	0( 0.0)	0( 0.0)	
<b>Self-reported face size</b>					
Very big	0( 0.0)	5( 3.1)	4(11.1)	3(17.6)	p < 0.001 <sup>***</sup>
Little big	8(21.6)	46(28.4)	21(58.3)	9(52.9)	
Moderate	20(54.1)	77(47.5)	9(25.0)	3(17.6)	
Small	8(21.6)	33(20.4)	2( 5.6)	2(11.8)	
Very small	1( 2.7)	1( 0.6)	0( 0.0)	0( 0.0)	
<b>Self-reported hair status</b>					
Very good	6(16.2)	14(10.5)	3(8.3)	8(47.1)	p = 0.004 <sup>**</sup>
Good	4(10.8)	44(27.2)	9(25.0)	4(23.5)	
Moderate	14(37.8)	58(35.8)	12(33.3)	2(11.8)	
Poor	10(27.0)	40(24.7)	9(25.0)	2(11.8)	
Very poor	3( 8.1)	3( 1.9)	3( 8.3)	1( 5.9)	

1) &lt; 18.5 underweight, 18.5 – 24.9 normal, 25.0 – 29.9 overweight, ≥ 30.0 obese

2) \* : p < 0.05, \*\* : p < 0.01, \*\*\* : p < 0.001 by  $\chi^2$ -test

### 5. Dietary behaviors of the subjects by sex

Dietary behaviors of the subjects by sex is shown in Table 6. As for self-recognition of eating habit problems, there was no significant difference between male and female college students, which was similar to the result of a previous study conducted at a university located in Incheon(Kwon & Chang 2000). However, this result was different from the result of a previous study conducted at the same university located in Incheon, which showed that male college students reported skipping meals and female students overate(You et al. 1995). It may be due to the fact that female college students tend to avoid overeating for weight control. The rate of female college students' skipping meals was significantly higher than that of male college students(p < 0.05). It was reported previously that female college students with extreme weight control at-

tempts for thinner body image skipped meals(Chang & Kwon 2001). However, this result was different from the result of a previous study conducted in Seoul, which showed that female students were more likely to have the meals regularly(Song 1998). As for skipped meals, there was no significant difference between male and female college students(p = 0.079). Most college students reported skipping breakfast. However, female college students skipped dinner more compared to male college students, which may be due to weight control. This result was similar to previous results(Kim et al. 1996 ; Kwon & Chang 2000 ; You et al. 1995). There was a significant difference in reason for skipping meals between male and female college students (p < 0.001). Male college students reported the reason for skipping meals as "lack of time for meals"(51.8%), "habitual"(29.8%), and "no appetite"(7.9%), while fe-

**Table 5.** Health-related lifestyles of the subjects by sex N(%)

	Male (n = 137)	Female (n = 115)	Significance
<b>Exercise</b>			
Yes	111(81.0)	68(59.1)	p < 0.001*** <sup>1)</sup>
No	26(19.0)	47(40.9)	
<b>Smoking &amp; drinking alcohol</b>			
None	12( 8.8)	30(26.1)	p < 0.001***
Smoking	2( 1.5)	2( 1.7)	
Drinking alcohol	62(45.3)	78(67.8)	
Smoking & drinking alcohol	61(44.5)	5( 4.3)	
<b>Number of cigarettes/day</b>			
None	74(54.0)	108(93.9)	p < 0.001***
≤ 1/2 packet	15(10.9)	4( 3.5)	
≤ 1 packet	34(24.8)	2( 1.7)	
≤ 2 packet	14(10.2)	0( 0.0)	
≥ 2 packet	0( 0.0)	1( 0.9)	

1) \*\*\* : p < 0.001 by  $\chi^2$ -test

male college students reported the reason for skipping meals as "lack of time for meals" (51.4%), "habitual" (14.3%), "no appetite" (12.4%), "indigestion" (11.4%), "attempt to lose weight" (7.6%). It was reported that college students commuting school long distance to skipped breakfast for lack of time for meals (Kim et al. 1997).

As for meal consumption rate, 82.4% of male college students and 59.2% of female college students reported less than 20 minutes, which showed a significant difference (p < 0.001). It was reported that overweight college students tend to eat meals in less than 10 minutes compared to underweight or normal college students at a university located in Mokpo (Kim et al. 1999). Therefore, it is necessary that college students eat meals slowly. There was a significant difference in the most important meal between male and female college students (p < 0.001). Male college students reported dinner (46.0%), breakfast (26.3%), lunch (16.1%), and female college students reported lunch (40.0%), dinner (24.3%), breakfast (23.5%). This result was different from results of previous studies which showed that female college students considered dinner most important (Jakobovits et al. 1977; You et al. 1995). As for overeating meals, there was a significant difference between male and female college students (p < 0.001). Male college students reported dinner (72.3%), lunch (27.7%) and female college students lunch (48.7%), dinner (44.3%),

**Table 6.** Dietary behaviors of the subjects by sex N(%)

	Male (n = 137)	Female (n = 115)	Significance
<b>Self-recognition of eating habit problem</b>			
Overeating	52(38.0)	51(44.3)	p = 0.091 <sup>NS1)</sup>
Skipping meal	38(27.7)	32(27.8)	
Unbalanced meal	14(10.2)	13(11.3)	
Eating salty & spicy meal	29(21.2)	11( 9.6)	
Eating the meal left over	3( 2.2)	3( 2.6)	
Others	1( 0.7)	5( 4.3)	
<b>Experience of skipping meals</b>			
Yes	105(76.6)	100(87.0)	p = 0.036 <sup>*2)</sup>
No	32(23.4)	15(13.0)	
<b>Skipped meals</b>			
Breakfast	90(85.7)	73(73.0)	p = 0.079 <sup>NS</sup>
Lunch	9( 8.6)	16(16.0)	
Dinner	6( 5.7)	11(11.0)	
<b>Reason for skipping meals</b>			
Lack of time for meals	59(51.8)	54(51.4)	p < 0.001***
No appetite	9( 7.9)	13(12.4)	
Habitual	34(29.8)	15(14.3)	
Having an indigestion	0( 0.0)	12(11.4)	
Weight loss	0( 0.0)	8( 7.6)	
Others	12(10.5)	3( 2.9)	
<b>Meal pace</b>			
≤ 10 min	25(18.2)	8( 7.0)	p < 0.001***
≤ 20 min	88(64.2)	60(52.2)	
≤ 30 min	18(13.1)	39(33.9)	
> 30 min	6( 4.4)	8( 7.0)	
<b>Most important meal</b>			
Breakfast	36(26.3)	27(23.5)	p < 0.001***
Lunch	22(16.1)	46(40.0)	
Dinner	63(46.0)	28(24.3)	
Always	16(11.7)	14(12.2)	
<b>Overeaten meal</b>			
Breakfast	0( 0.0)	7( 6.1)	p < 0.001***
Lunch	38(27.7)	94(48.7)	
Dinner	99(72.3)	150(44.3)	
Others	0( 0.0)	1( 0.9)	

1) NS : Not significant

2) \* : p < 0.05, \*\*\* : p < 0.001 by  $\chi^2$ -test

breakfast (6.1%). In conclusion, nutrition education is necessary in order to encourage college students to practice proper dietary behaviors.

## 6. Eating out of the subjects by sex

Eating out patterns of the subjects by sex are shown in Table 7. There was a significant difference in frequency of eating out between male and female college

students ( $p < 0.05$ ). This result was similar to a previous result which showed that frequency of eating out in male college students was significantly higher compared to female college students (Kim et al. 1996; You et al. 1995). It may be due to the fact that the rate of male college students who living in boarding houses with cooking or in a dormitory was significantly higher compared to the that of female college students. However, it was reported previously that there was no significant difference in frequency of eating out between male and female college students (Kwon & Chang 2000). There was no significant difference in

the reason for eating out between male and female college students ( $p = 0.06$ ). Most college students reported as "meal" and "social", and 7.4% of male students and 1.8% of female students reported as "nutrition", which was similar to the previous results (Kwon & Chang 2000; You et al. 1995). On the other hand, there were no significant differences in time and place of eating out between male and female students. Therefore, it is necessary to encourage college students to recognize the importance of proper nutrient intake through meals.

**Table 7.** Eating out patterns of the subjects by sex N(%)

	Male (n = 137)	Female (n = 115)	Significance
<b>Frequency of eating out</b>			
None	2( 1.5)	0( 0.0)	
1 - 2 times/month	22(16.1)	13(11.4)	
2 - 3 times/week	37(27.0)	53(46.5)	$p = 0.014^{*1)}$
2 times/day	67(48.9)	45(39.5)	
3 times/day	9( 6.6)	3( 2.6)	
<b>Time of eating out</b>			
Never	2( 1.5)	0( 0.0)	
Breakfast	0( 0.0)	1( 0.9)	
Between breakfast and lunch	1( 0.7)	1( 0.9)	
Lunch	46(33.6)	41(36.0)	$p = 0.642^{NS2)}$
Between lunch and dinner	2( 1.5)	4( 3.5)	
Midnight meal	42(30.7)	32(28.1)	
$\geq 2$ times/days	44(32.1)	35(30.7)	
<b>Reason for eating out</b>			
Social	20(14.8)	23(20.2)	
Taste	11( 8.1)	9( 7.9)	
Meal	74(54.8)	63(55.3)	$p = 0.060^{NS}$
Save time	11( 8.1)	3( 2.6)	
Nutrition	10( 7.4)	2( 1.8)	
Others	9(6.7)	14(12.3)	
<b>Place of eating out</b>			
Korean restaurant	44(32.6)	42(37.2)	
Chinese restaurant	55(40.7)	28(24.8)	
Western-style restaurant	2( 1.5)	1( 0.9)	
Campus cafeteria & snack corner	5( 3.7)	3( 2.7)	$p = 0.090^{NS}$
Restaurant around campus	16(11.9)	24(21.2)	
Others	13( 9.6)	15(13.3)	

1) \* :  $p < 0.05$  by  $\chi^2$ -test

2) NS : Not significant

## Summary and Conclusion

In order to investigate self-perception and practices of health and appearances, health-related lifestyles and dietary behaviors of Korean college students attending web class via the Internet, the cross sectional survey was carried out using a self-administered questionnaire from November 1 to 15, 1999. The subjects were 300 college students attending nutrition and health-related web class at a cyber university. For statistical analysis, 252(male 137, female 115) a well-completed questionnaire was used. The results are as follows :

1) Average ages of male and female college students were 24.3 and 23.1 years, respectively. The rate of female college students living at home with their parents was significantly higher compared to that of male college students. The rate of female students at the College of Liberal Arts was significantly higher and the rate of male students at the College of Engineering was significantly higher compared to that at other colleges. There was a significant difference in the main area of computers used by male and female college students.

2) The average height, weight and BMI of the male and female students were 174.4cm, 67.8kg, 22.3 kg/m<sup>2</sup> and 162.3cm, 52.1kg, 19.8kg/m<sup>2</sup>, respectively. The height of college students and the weight of male students were higher compared to the Korean Standard for Age. The average BMI of male students was in the normal range.

3) Male college students perceived their health statuses significantly better compared to female students.



As for self-evaluation of anemia, female college students perceived significantly more anemia symptoms compared to male college students. Concern about appearance in female college students was significantly higher compared to that in male college students. Female college students perceived their body images fatter compared to male college students. There was a significant difference in applying make-up, using accessories and products for appearance between male and female college students.

4) Underweight college students were perceived significantly less healthy compared to other college students. As for self-evaluated anemia, underweight college students were perceived significantly more anemia symptoms compared to other college students. There was a significant difference in self-perception of body images among groups divided by BMI. Overweight or obese college students perceived their faces significantly bigger compared to that of normal or underweight college students. Underweight college students perceived significantly worse hair conditions compared to other college students.

5) The rate of male students who exercised was significantly higher compared to that of female students. Male students reported significantly more smoking and drinking of alcohol compared to female students. Also there was a significant difference in the number of cigarettes smoked by male and female college students.

6) The rate of female college students skipping meals was significantly higher than that of male students. There was a significant difference in reasons for skipping meals between male and female college students. As for meal consumption rates, 82.4% of male college students and 59.2% of female college students reported less than 20 minutes, which showed a significant difference. There was a significant difference in the most important meal and overeating meals between male and female college students.

7) Frequency of eating out in female college students was significantly higher compared to that in male students.

In conclusion, these results may provide some basic information in developing a nutrition education program for college students using the Internet.

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