Gender Perspectives on Adolescents’ Eating Behaviors: A Study on the Eating Attitudes and Behaviors of Junior Secondary Students in Hong Kong

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Abstract

Objective: This research aimed to investigate the eating attitudes and behaviors of junior secondary students in Hong Kong, with a specific focus on possible gender differences.

Design: A survey was conducted in 2005 to solicit data about participants’ food knowledge, eating attitudes and behavior, perceptions of cooking skills and body weight; and related factors influencing food choice.

Setting: Twenty three secondary schools located in different district areas of Hong Kong.

Participants: The sample was comprised of 836 students (41% male, 59 % female) aged 11-18 years selected by random sampling.

Analysis: Cross tabulation analyses were used to compare the responses by gender.

Results: Regardless of gender, less than half of the sample ate breakfast every day, and their consumption of fruits and vegetables was below recommended daily intakes. No significant differences were observed between respondents’ eating habits and levels of food knowledge. Female students were more weight conscious than male students. Dissatisfaction about body weight was common among normal and underweight students. Cooking skills were generally valued as important life skills by both genders, though cooking skills were seen to be more relevant for girls.

Conclusions and Implications: School nutrition education in Hong Kong should be designed to appeal to boys as well as girls, and effective implementation of nutrition education programs should inculcate healthy eating habits, sound cooking skills, and address the needs of students with reference to gender differences. A more diversified approach could be employed through formal and informal curricula, prioritizing cooking skills and food advertising literacy in the curriculum.

Key Words:
Gender differences, Adolescents’ eating behavior, Healthy food choice, Cooking skills, Eating habits, Food advertising literacy
INTRODUCTION

Adolescence is characterized by rapid growth and maturation. Healthy eating helps young people to achieve their full growth potential, promotes their health and well-being, and reduces their risk of chronic diseases in adulthood [1]. Food choice patterns established during youth will likely influence long-term behaviors [2]. There are a variety of factors which influence young people’s food choices. For example, taste and flavor have consistently been reported as major influences on food choice [1, 3-4]. Other factors include cost and accessibility of the food, and the perceived healthiness or energy density characteristics of the food [1, 5]. Environmental concern appears to influence food choice [6, 7]. Recent studies have revealed relationships between body image and adolescent eating behavior [8-10]. Young peoples’ eating habits also appear to be influenced by the family, peers, the social eating culture as well as mass media messages [4, 5, 11, 12].

International studies have indicated that despite possessing considerable food knowledge, many adolescents find it difficult to follow healthy eating recommendations and often consume food that they think is unhealthy [11, 13]. Similar findings have been found among Hong Kong students, which indicated that many students are not able to put the theory they learn in the classroom into practice [14]. Understanding young people’s beliefs and attitudes about food will help practitioners design and implement effective interventions to help adolescents develop life-long healthy eating habits. Therefore, the present study was conducted from 2005 to 2006 to investigate the eating attitudes and behaviors of junior secondary students.

The theoretical basis of this study was the Food-Related Lifestyle model [15-16]. In this model, variables which make up consumers’ lifestyles include usage situations (social situations in which people eat and buy foods, e.g. home, canteen, restaurant); concrete food product attributes (perceived sensory properties such as taste, smell, texture and appearance of the food);
shopping scripts (the knowledge that enables people to shop for food products, e.g. Do they read food labels?); meal preparation scripts (the knowledge that enables people to transform food into meals, e.g. How much time is used for preparation? Is it certain family members’ responsibility? Is it by family division of labor?); higher order attributes (attributes such as healthy, nutritious, natural, trendy, convenience properties); expected consequences after consumption of the food (e.g. acceptance by members of the family, feeling sick after eating raw food and increasing body weight after eating food high in fat); and personal values (e.g. peer acceptance, taste enjoyment, healthy food choice for long term health consequences).

This study was broadly based on the ways in which factors such as shopping and food preparation scripts, cost, habitual usage, attitudes and beliefs about nutrition, influence food choice behaviors. Although gender differences in several components of the Food-Related Lifestyle model have been described among adults in several studies [1, 17-19], they have not been widely examined in relation to adolescents’ food choice behaviors, particularly Chinese adolescents’ food choice.

Generally, females make more healthy food choices than males [20]. They are more likely to avoid high-fat foods, eat fruits and foods with high dietary fiber, and limit salt intakes [19]. Women also appear to be more reflective about food and health issues and express more ethical concerns in relation to food [17]. For example, American women appear to favor healthier meals than men, and they rate such meals higher on dimensions of pleasure, convenience and health [21]. Similarly, Norwegian women appear to have higher levels of health knowledge than men, and are more inclined to make dietary changes in line with official recommendations [22]. Women’s beliefs and practices are important because they often control family food consumption. In this study, it was expected that girls would exhibit healthier eating habits and be more concerned about healthy eating than boys. It was also expected that girls would demonstrate greater food knowledge than boys.
Generally, the main responsibility for food preparation in the household lies with women. For example, women prepared the evening meal in 70 per cent of UK households in 1992 [23]. In the eyes of children, the prominent person in the household for the transmission of cooking skills is still "mum" and older sisters [24]; many still believe that cooking skills are more important for girls than boys [25, 26]. Indeed, men are more likely to have first learned cooking skills from their wives or partners than from school or books [27]. Therefore, it is hypothesized that more boys than girls are likely to believe cooking skills are “women’s business”. Lack of food preparation skills is found to be one of the barriers to the consumption of a healthy diet, [24, 27-28]. In that case, men may be more vulnerable to unhealthy eating if they are unable to cook.

Women are more likely than men to report that weight concerns influence their food choices, and that healthy eating is important to them. For example, more female than male students used food label information about fat content and low-fat foods [1]; women are more likely than men to be dieting; to deliberately alter their diet in order to lose weight; to report eating in response to stress or boredom and guilt in relation to eating [17, 19]. Further, the use of weight loss diets is more a characteristic of females than males [17, 29-30]. These general findings also appear to apply to the young people in Hong Kong [8, 10]. Therefore, in this study, it was expected that girls would be more weight conscious than boys.

From an extensive review of previous literature it was expected that there would be gender differences demonstrated in Hong Kong adolescents' belief and use of food. Therefore, this paper aims to investigate the eating attitudes and behaviors of junior secondary students (those studying at secondary level 1,2 and 3, aged between 11 and 16 years), and examine possible gender differences among Hong Kong secondary students. The following hypotheses were made:

1. Girls will have healthier eating habits and will be more concerned about healthy eating;
2. Girls are more competent in food knowledge than boys;
3. More boys than girls are likely to believe cooking skills are girls’ business;
4. Girls will be more weight conscious than boys.
METHOD

The Questionnaire

A questionnaire was constructed to assess eating attitudes and behaviors with reference to the factors included in the Food-Related Lifestyle model [15, 16]. There were 56 questions about the subjects’ food use situations (social settings such as the home, schools and restaurants); how they shop and prepare foods (such as types of food purchased and prepared at home); concrete attributes (such as taste and cost) and higher attributes (‘credence variables’ such as perceptions of healthiness and convenience); as well as the consequences they may associate with eating (such as the risk of chronic diseases). Some of the questionnaire items were based on those used in earlier studies in Hong Kong [31-32]. Attitudes about food choice, concerns about healthy eating, cooking skills; perceived peer health and weight concerns were generally assessed by closed questions using five-point response scales (strongly agree; agree; disagree; strongly disagree and not sure), in which respondents were requested to specify their level of agreement to a statement or a question. Open-ended options were also used to enable respondents to provide their own answers to certain questions and to provide reasons and examples (see Appendix 1 for examples of questionnaire items). A pilot-test with eight academics and twenty students was conducted to identify confusing and ambiguous language and to obtain information about possible patterns of results [33].

Survey Administration

Fifty-eight schools were invited to participate in the survey, of which twenty three agreed to take part. These schools were scrutinized to ensure representation of different school types and locations in the various districts that serve diverse socioeconomic communities within Hong Kong. The Home Economics teacher of each participant school was requested to administer questionnaires to forty students studying at Secondary 1 to Secondary 3 selected by random
sampling. For example, the teachers drew lots to pick two classes (each of 40 students) from the junior forms and then randomly selected students by picking odd or even numbers on the class list. Informed consent was obtained from all the respondents and their parents, and they were assured their responses would be kept in confidence. Ethics permission for this study was granted by the Deakin University Human Ethics Committee. Nine hundred and twenty questionnaires were disseminated and 836 completed questionnaires were returned for data analysis, making up a response rate of ninety percent.

**Data Analysis**

Returned questionnaires were scanned using the ‘TeleForm Software Package’ and the data were analyzed by the SPSS 12.0 for Windows (SPSS version 12.0, SPSS Inc., Chicago, IL, 2003). Although 836 questionnaires were used for analyses, there were occasional missing counts in some of them. Therefore the maximum number of responses available was analyzed. Body mass index (BMI) was calculated using the formula: (BMI = Weight [in kilograms] / (Height [in meters])²) from self-reported heights and weights, and was categorized according to the standard for children and adolescents recommended by the Taiwan Department of Health [34]. Self-reported height and weight data from teenage populations provides valid indices of true height and weight, though they should be used with caution as subjects may underestimate their weight [35-37].

Prior to cross tabulation analyses, the five point response scales were aggregated into three groups (for example, ‘strongly agree’ and ‘agree’ were collapsed into ‘agree’; ‘strongly disagree’ and ‘disagree’ were collapsed into ‘disagree’; and not sure remained unchanged). This was performed to increase the expected cell frequencies. Cross tabulation analyses were used to compare the responses of the students by gender and BMI category. Chi square tests were used to access the statistical significance of the comparisons. An alpha level of P<0.01 was set to determine statistical significance. Results relevant to the gender issues are reported here, other findings are reported elsewhere [14].
RESULTS

Demographic Characteristics

Most of the 836 respondents were in the 11-14 year age group (82%) and only a minority (18%) was in the 15-18 age group. There were more female students than male students in the sample (Table 1). Fourteen percent of the males were overweight, slightly less than two thirds were in the “normal” range and a quarter was underweight. The distribution of male students across this variable was similar to that of the female students (Table 1).

Students’ Perceptions of Body Weight and Image

More female students reported they would feel upset if they found themselves overweight, and the majority of the female respondents watched their weight (20% always; 65% sometimes). Most of them would be likely to go on a slimming diet if their weight increased, and some of them would eat less food to compensate if they had eaten a lot of high energy food. Overall, female students were more conscious about their body weight than male students (Table 2). Despite the fact that only about fourteen percent of the sample was overweight, one third of the respondents were not satisfied with their weight. Among this group of 252 students (students not satisfied with their weight), only a quarter was from the overweight group, three quarters were from the normal (57%) and underweight (17%) categories (Table 3).

Students’ Eating Attitudes and Behaviors

Flavor (38%) and cost (23%) were found to be the main concerns of the students regarding food choice; hygiene (22%) and nutritive value (13%) were relatively less important influences. Very few respondents (3%) rated body image as important; peer food choice and environmental concern were of least importance (1%, 1%).

About half of the students (49%) reported that they were concerned whether the food they ate was healthy or not, but only about one third (35%) would choose healthy food for snacks. Slightly less than half (43%) of the students reported that when eating tasty food they could not
stop themselves from eating even though they were no longer hungry. The majority (87%) was concerned that bad eating habits may lead to eating related diseases in the long run, such as heart disease, cancer, osteoporosis, diabetes, and hypertension. Most of the respondents (80%) believed that the tuck shops in their schools provide healthy options for snacks and drinks. More than half (60%) of them thought it was okay for the school tuck shop to sell junk food. No significant differences by gender were observed in these regards. More female students believed that their friends care about eating healthy food (62% versus 53%) and more male students believed that their friends care very much about staying fit and exercising than the female students (66% versus 58%).

**Students’ Eating Habits**

Slightly less than half (46%) of the sample ate breakfast everyday. The percentages who consumed bread, vegetables and fruits are shown in Table 4 by gender. Fourteen percent of the group never included milk in their diet, and milk consumption by the majority (81%) of the sample was below recommended portion of two glasses a day. The consumption of vegetables by each gender was similar, but more boys drank milk at least once a day. As for bread, most of the students preferred white bread to brown bread, and the percentage for each gender was similar. One third of the sample avoided visible fat when eating meat while twelve percent said they ate all the visible fat. In this regard, more male students ate all the visible fat whereas more female students removed all the visible fat. On the other hand, the majority (72%) of the sample usually chose low fat milk, but more female students preferred low fat milk to full cream milk than the male students did.

**Students’ Food Knowledge**

The majority of the sample (94%) had studied food and nutrition in their school curriculum through Home Economics (currently renamed Technology and Living); and most of them also learned cooking (86%), shopping (78%) and food label reading skills (75%) from this subject. However, less than half of them (41%) had learned how to cope with food advertising and
marketing. In general more than two thirds of the respondents gave correct answers to the questions in the food knowledge quiz (no significant differences were observed between male and female students). The majority (92%) of the students knew that exercising everyday helps prevent heart disease. About two thirds (67%) of the respondents believed that they had acquired sufficient food knowledge from school and were competent to make healthy food choices.

**Perceptions and Mastery of Cooking Skills**

Cooking skills were taught in all the twenty three surveyed schools. Most of the respondents considered cooking skills important and believed that everyone should learn how to cook. However, ten percent of the sample thought that cooking was not the boys’ business and more male students thought that only girls should learn cooking. Slightly less than half of the male students (47%) reported they always or sometimes learn cooking skills from their parents, but more than half of the female students (57%) did so (Table 5).

**DISCUSSION**

**Students’ Eating Attitudes**

Flavor and cost were the main concerns of the students and hygiene and nutritive value were considered secondary preferences. This agrees with findings from both international and local studies [1, 3-4, 31, 38]. Contemporary decision making theories suggest that sensory appeal is one of the most important factors in food choice [6]. Taste and appearance of food are primary factors in adolescents’ food selection [1], and it has been argued that adolescents who ranked snack taste as the most important factor were less likely to report intended low fat snack choice [5].

The majority of this sample was concerned that bad eating habits may lead to nutrition related diseases in the long run, yet only one in three of them would choose healthy food for snacks. Many also reported that they could not stop themselves from eating when eating tasty
food even though they were no longer hungry. This suggests that adolescents, regardless of gender, may not practice healthy eating habits even if they possess food knowledge, which agrees with similar findings from both local and international studies[11, 13-14]. For example, an American study indicated that adolescents found it difficult to follow healthy eating recommendations despite having sound food knowledge [13]. A local Teacher Survey also revealed that most students prefer immediate food enjoyment to long term health. Cravings were identified by the teachers as one of the barriers to healthy eating, apart from other barriers such as insufficient school support and influences brought about by peer, family, media and the social eating culture [14]. Food cravings are significant psychological phenomena which may be triggered by exposure to the sensory properties of foods. They may have adverse nutritional effects such as unhealthful snacking behavior [39]. Contrary to my expectations, the findings did not support the hypothesis that girls would be more concerned about healthy eating than boys.

The present survey indicated that peer choice was seen to be of minor importance by most of the respondents. This contradicts findings from Story et al’s study [40], which suggests that peers help to create the norms concerning behavior, and exert a major influence on overall adolescent behavior. Chapman and Maclean indicate that junk food was associated with friends and pleasure, whereas liking healthy food was perceived as an oddity [41]. Likely reasons for this discrepancy could either be that students’ perceptions may not reflect their actual behavior, or that not enough questions about peer influence were included in the questionnaire.

The female students were more concerned about removing fat from meat and choosing low fat milk, thus supporting hypothesis 1, which expects that girls would have healthier eating habits and would be more concerned about healthy eating. Some research suggests that healthy eating among adolescents may be due more to wanting a slender body shape than to the pursuit of health [9]. There was a statistically significant difference between female and male students regarding consciousness of fat intake, however, whether the respondents’ choices reflected health
consciousness or weight consciousness is uncertain. Such a difference may be due to girls’
greater interests in slim fashion and boys’ interests in fitness and masculinity. In that case, the
finding may support hypothesis 4, which predicted that girls would be more weight conscious
than boys.

Students’ Food Knowledge and Eating Habits

Males and females exhibited similar levels of nutrition knowledge and similar consumption
of vegetables, fruits, milk and bread. This runs counter to our hypothesis that girls would have
healthier eating habits and exhibit greater nutrition knowledge than boys. Although the students
generally believed that they had acquired sufficient food knowledge from school and were
competent to make healthy food choices, data about their eating habits did not support their
claims. More than half of them did not eat breakfast everyday (54%), and only about one tenth of
them met the fruit and vegetable guidelines of the Hong Kong Department of Health [42], (two
bowls of vegetables and two portions of fruit per day, see Table 4). This is consistent with
findings from other international and local studies [42-43]. Family eating habits may partly
explain this finding as there appears to be an association between parental eating habits and fruit
and vegetable consumption of children [44]. Studies have also found that adolescent fruit and
vegetable consumption is related to socioeconomic status [45].

Consumption of brown bread by participants was low. This observation also agrees with
other research conducted locally, which revealed low awareness of the value of whole meal bread
and vegetables [46-48]. Furthermore, only 5% of the subjects met the recommended daily intake
of two servings of milk. This may be due to the fact that milk is not a traditional foodstuff in the
Chinese diet, yet there may be factors such as lactose intolerance other than cultural reasons.

Local studies revealed that the Hong Kong population has a low mean calcium intake [47, 49],
below the recommendations of the WHO/FAO [48].
The present findings indicate that food and nutrition were generally taught as part of the Home Economics curriculum in most of the schools. While cooking skills, shopping and food label reading skills were often included in the curriculum, food advertising and marketing are often not included. Students and teachers may be unaware of the adverse effects of food advertising and marketing on eating habits. In Hong Kong, food and nutrition topics may not be adequately covered in Home Economics owing to a shared timetable with Design and Technology and content selection at teachers’ discretion.

**Students’ Food Preparation Skills and Attitudes to Cooking**

The differences between the views of male and female students reflect a gender-stereotyped traditional view that cooking is women's responsibility and is consistent with international and local studies. This is consistent with international and local studies [23-26]. Men (and women) who are unable to cook are likely to be more vulnerable to unhealthy eating [27]. The present findings show that although cooking skills are valued as important life skills by young people of both genders, not all of them have the opportunity to learn cooking skills from their parents and from school.

**Students’ Perceptions of their Own Body Weight**

Many students, especially female students, in this study were conscious of their body weight. The willingness of female students to change their food consumption in order to stay at a fashionable weight suggests that eating behavior is associated with their perceptions of body image. This reflects findings from international and local studies [8-9].

Physical definitions of overweight with reference to BMI did not equate with personal perceptions of body weight. The majority of respondents who were not satisfied with their weight were from the normal and underweight categories. This agrees with findings from recent Hong Kong studies [10, 50]. Reasons given by those respondents in the normal BMI category who were dissatisfied with their weight generally reflected their desire to look slim. Attitudes towards dieting have changed dramatically over the past few years. People no longer diet exclusively for
health reasons. It has become increasingly common for non-obese people in Hong Kong, particularly women, to diet in order to look thinner [8]. This may be an effect of the ‘tyranny of slenderness’ associated with food advertising [50-52]. This is an important area for school nutrition education as recent studies have indicated that adolescents’ anxiety about body weight and their interest in dieting will influence their everyday food choice, and sometimes may lead to eating disorders [9-10, 53-54].

**Limitations**

The questionnaire elicited self-reported weight (kg) and height (cm). Although it is argued that self-reported height and weight data from teenage populations provides valid indices of true height and weight [36-38], some subjects may have reported inaccurate information; underestimated their weight; or responded in socially desirable ways. Self-reported behavior such as the frequency of vegetable consumption may be subject to recall error. Therefore, the generalization made should be used with caution. Furthermore, the study employed a cross-sectional design, which prevents the making of causal attributions. In addition, the dietary intakes of the subjects were not measured in detail. Further validation and replication of the study findings in subsequent studies is required.

With a view to enhance validity and reliability of the survey, some items which had been used in other validated studies were included in this exploratory survey [31-32]. To provide evidence of reliability, responses of various categories of subjects (e.g. gender and BMI) were compared to check whether known differences from previous studies were also present in the data of this study. As discussed in the foregoing section, results of this preliminary study were also compared with those from other international and local studies.

**IMPLICATIONS FOR RESEARCH AND PRACTICE**

**Implications for School Nutrition Education**
Home Economics was found to be a major channel for students to learn food and nutrition as well as cooking skills. Gewirtz and Ball [55] have argued that, principals are increasingly driven by market principles and parental choice; such attitudes may disadvantage the survival of Home Economics in the curriculum in Hong Kong. In recent years, there has been an increase in the number of secondary schools discontinuing Home Economics, indicating that some principals are not supportive of including Home Economics in the curriculum due to other competing demands. In a 2001 Home Economics Teacher Survey in Hong Kong, 22% of the respondents indicated that the subject faces a crisis in that its value is becoming trivialized in the teaching environment [56]. In the Hong Kong education reforms, the subject’s status is uncertain. The profile of secondary schools in 2006 (Committee on School Home Cooperation) revealed a low percentage (6%) of schools’ intending to allow Home Economics as an elective for their senior levels in 2009 [57]. Since food and nutrition and healthy eating topics are taught mainly through Home Economics at schools, the survival of the subject in secondary schools is important for a continuing place for nutrition education in the school curriculum. On the other hand, female students in this study appear to be more weight conscious, however, advertising literacy in nutrition education was not commonly taught in the schools. In view of the adverse effects in food choice brought about by the ‘tyranny of slenderness’, highlighting the problems of food advertising should be an important starting point to raise awareness of the issue.

This study confirms the existence of gender differences in weight consciousness and in perceptions of cooking skills. However, the overwhelming finding was that irrespective of gender, most adolescents exhibited poor eating habits. Further research is needed to identify barriers which prevent adolescents from consuming healthy diets. A holistic food and nutrition curriculum which supports the development of healthy eating habits and sound cooking skills is needed to help young women and men translate food knowledge into daily practice.
**Recommendations**

To help students develop lifelong healthy eating habits, a more holistic food and nutrition curriculum is needed not only to teach students food knowledge at the cognitive level. A more diversified approach could be employed through formal and informal curricula to expose students to various influences over food choices. For example, students might be given opportunities to evaluate food issues not only from a scientific perspective, but also from humanistic (including emotional, psychological and environmental) and socially critical perspectives. Advertising literacy should be included as part of the nutrition or consumer education curriculum at schools, with more attention being given to female students. Education practitioners in Hong Kong should help young people to acquire positive attitudes towards body weight through implementing relevant value education and media literacy education programs.

There is a need to examine the reasons for the low milk consumption and to encourage eating of more fruits and vegetables. Incorporation of milk, fruits and vegetables as well as whole meal cereals such as brown rice should be encouraged in family diets and lunches provided at schools. School canteens should provide healthy options, and make healthy foods more appealing to teenagers.

School nutrition education in Hong Kong should be designed to appeal to boys as well as girls, and cooking should form a ‘core’ component of the nutrition curriculum. To provide opportunities for students to put theory into practice, nutrition education should go beyond the classroom. Therefore, schools and families should work together to provide a favorable environment for inculcating good eating habits.

**Directions for Further Research**

Further research is required to explore the ways in which schools and families can collaborate to encourage cooking at home, that is, to make the home a context where theories from school nutrition education can be put into practice. The influence of the mass media and food marketing should also be examined in further research, in order to provide a holistic food
and nutrition education for young people. More focused research to examine the effects of peer
influence on eating habits is also needed.

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### Table 1  Breakdown of BMI category by gender

<table>
<thead>
<tr>
<th>BMI Category</th>
<th>Male (n)</th>
<th>%</th>
<th>Female (n)</th>
<th>%</th>
<th>Total (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>78</td>
<td>25</td>
<td>113</td>
<td>24</td>
<td>191</td>
<td>24</td>
</tr>
<tr>
<td>Normal weight</td>
<td>188</td>
<td>61</td>
<td>293</td>
<td>63</td>
<td>481</td>
<td>62</td>
</tr>
<tr>
<td>Overweight</td>
<td>43</td>
<td>14</td>
<td>63</td>
<td>13</td>
<td>106</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>309</td>
<td>100</td>
<td>469</td>
<td>100</td>
<td>778</td>
<td>100</td>
</tr>
</tbody>
</table>

**BMI standard used to define weight status of adolescents**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>11-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underweight</td>
<td></td>
<td>(≤ 16.7) (≤ 18.8)</td>
</tr>
<tr>
<td>Normal weight</td>
<td>(16.8 - 21.9) (18.9 – 23.5)</td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>(≥ 22) (≥ 23.6)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Taiwan Department of Health, 2007

The number of respondents to this item was 778.

### Table 2  Students’ consciousness about body weight by gender

<table>
<thead>
<tr>
<th>Items</th>
<th>Male % agree</th>
<th>Female % agree</th>
<th>All % agree</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am satisfied with my weight.</td>
<td>67 (24)</td>
<td>55 (37)</td>
<td>60 (32)</td>
<td>16.54</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>I will feel upset when I find myself</td>
<td>40 (43)</td>
<td>66 (25)</td>
<td>55 (32)</td>
<td>51.08</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>overweight.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I have eaten a lot of high energy food</td>
<td>35 (49)</td>
<td>37 (44)</td>
<td>36 (46)</td>
<td>6.73</td>
<td>.151</td>
</tr>
<tr>
<td>which I know is unhealthy, I eat less of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>other food to make up for it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I keep watching my weight.</td>
<td>67 (33)</td>
<td>85 (15)</td>
<td>77 (23)</td>
<td>49.02</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>I will go on a slimming diet if my weight</td>
<td>50 (50)</td>
<td>63 (37)</td>
<td>58 (42)</td>
<td>14.99</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>goes up.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The number of respondents to these items ranged from 806 to 836.

NS= not significant

### Table 3 Students’ consciousness about body weight by BMI category

<table>
<thead>
<tr>
<th>Items</th>
<th>BMI underweight</th>
<th>BMI normal</th>
<th>BMI overweight</th>
<th>All</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am satisfied with my weight.</td>
<td>67 (23)</td>
<td>65 (29)</td>
<td>18 (79)</td>
<td>60 (32)</td>
<td>86.28</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>(% within those not satisfied with their</td>
<td>17</td>
<td>57</td>
<td>26</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>weight n= 252)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I keep watching my weight.</td>
<td>72 (28)</td>
<td>79 (21)</td>
<td>83 (17)</td>
<td>78 (22)</td>
<td>19.96</td>
<td>.041</td>
</tr>
</tbody>
</table>

The number of respondents to these items ranged from 780 to 836.
Table 4  Students’ eating habits regarding high fibre food and fat intake by gender

<table>
<thead>
<tr>
<th>Items</th>
<th>Male (n=328)</th>
<th>Female (n=476)</th>
<th>All (n=804)</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which one do you choose among the following 2 types of bread:</td>
<td></td>
<td></td>
<td></td>
<td>1.326</td>
<td>.250 (NS)</td>
</tr>
<tr>
<td>% white bread ( % brown bread )</td>
<td>73 (27)</td>
<td>76 (24)</td>
<td>75 (25)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Amount of vegetables eaten everyday

<table>
<thead>
<tr>
<th>Consumption</th>
<th>Male</th>
<th>Female</th>
<th>All</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>None at all</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very little</td>
<td>20</td>
<td>15</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Half bowl</td>
<td>36</td>
<td>34</td>
<td>35</td>
<td>5.35</td>
<td>.253 (NS)</td>
</tr>
<tr>
<td>1 bowl</td>
<td>35</td>
<td>41</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 bowls</td>
<td>9</td>
<td>8</td>
<td>9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Frequency of eating fruits

<table>
<thead>
<tr>
<th>Consumption</th>
<th>Male</th>
<th>Female</th>
<th>All</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twice a day</td>
<td>8</td>
<td>13</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once a day</td>
<td>52</td>
<td>49</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-6 times a week</td>
<td>26</td>
<td>25</td>
<td>26</td>
<td>4.52</td>
<td>.340 (NS)</td>
</tr>
<tr>
<td>2-4 times a week</td>
<td>11</td>
<td>12</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>once a week</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you avoid visible fat, such as chicken skin, when eating meat?

<table>
<thead>
<tr>
<th>Consumption</th>
<th>Male</th>
<th>Female</th>
<th>All</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>% remove all the fat ( % eat all the fat)</td>
<td>24 (20)</td>
<td>42 (7)</td>
<td>35 (12)</td>
<td>50.01</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

Which type of milk do you usually drink:

<table>
<thead>
<tr>
<th>Consumption</th>
<th>Male</th>
<th>Female</th>
<th>All</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>% full cream milk ( % low fat milk)</td>
<td>34 (66)</td>
<td>25 (75)</td>
<td>28 (72)</td>
<td>7.28</td>
<td>.007</td>
</tr>
</tbody>
</table>

The number of respondents to these items ranged from 804 to 836.
NS= not significant

Table 5  Students’ attitude about cooking skills by gender

<table>
<thead>
<tr>
<th>Items</th>
<th>Male (n=329)</th>
<th>Female (n=476)</th>
<th>All (n=805)</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyone should learn how to cook</td>
<td>73 (17)</td>
<td>82 (11)</td>
<td>78 (13)</td>
<td>10.62</td>
<td>.005</td>
</tr>
<tr>
<td>Only girls should learn how to cook; cooking is none of boy's business</td>
<td>16 (75)</td>
<td>5 (93)</td>
<td>10 (86)</td>
<td>50.81</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Cooking skills are important life skills?</td>
<td>70 (7)</td>
<td>80 (3)</td>
<td>76 (4)</td>
<td>16.86</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>At home, my parents teach me how to cook food</td>
<td>47 (53)</td>
<td>57 (43)</td>
<td>53 (47)</td>
<td>11.45</td>
<td>.010</td>
</tr>
<tr>
<td>% agree (% disagree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% important (% not important)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% always or sometimes (% rarely or never)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The number of respondents to these items ranged from 805 to 836.