

# Baseline Assessment of Promoting Healthy Eating in Primary Schools

## Main Report



# 小學推行健康飲食基線研究 主要報告



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# Summary

## Background & Objectives

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The Department of Health (DH) has recorded a rising trend of obesity among primary school students, from 16.4% in 1997/ 98 to 18.7% in 2004/ 05, i.e. almost one in every five schoolchildren is obese. In this light, initiatives which aim at preventing childhood obesity should be implemented.

Promoting healthy eating habit among schoolchildren is one of the new initiatives in the 2005-2006 Policy Address. To prepare for the coming territory-wide “EatSmart@school.hk” campaign organised by DH, a ***Baseline Assessment of Promoting Healthy Eating in Primary Schools*** has been conducted in the first quarter of 2006. The results of this study would be used as a reference in developing relevant health promotion resources and for subsequent evaluation of the Campaign.

The objectives of this study were:

- To study the knowledge and practices of and attitudes to healthy eating among primary school students, and the attitude towards healthy eating in school among the parents;
- To investigate the nutritional environments among primary schools, such as types of food available in lunch boxes, tuck shops and vending machines, and policy stipulated by schools;
- To find out the factors affecting students’ eating behaviour and promotion of healthy eating in primary schools; and
- To give recommendations on strategic and resources development of the “EatSmart@school.hk” campaign.

## **Research Methodology**

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Primary 4 and Primary 5 students, their parents and principals/ school representatives of primary schools in Hong Kong were selected to participate in the study by a stratified cluster sampling method. A total of 44 schools were drawn in proportion to the number and types of schools in each district.

Three separate sets of self-administered questionnaires for students, parents and school principals/ representatives were designed by DH. A pilot test was conducted in January 2006. The study was carried out between 13 February and 6 March 2006.

A total of 9,831 sets of questionnaires for students and parents were distributed, with 9,222 questionnaires for students and 9,014 for parents returned. The corresponding response rates were 93.8% and 91.7% respectively. As for the questionnaire for schools, all 44 recruited schools returned their questionnaires. The response rate for schools was 100%.

## Key Findings of the Study

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### Demographics

Among the participating students, the demographic profile in terms of class and sex was similar to that of the student population of Primary 4 and Primary 5 in Hong Kong, consisting of 48.5% Primary 4 students and 47.9% female students.

The majority of participating parents were female (77.2%), about 60% had secondary education attainment and about one quarter (24.6%) attained post-secondary education or above. Sixty percent of them had monthly household income below HK\$20,000.

Among the participating schools, a slight difference in the school type was noted between the sample and the profile of primary schools in Hong Kong. Most of the participating schools were whole-day (93.2%) and co-educational (97.7%) schools. Forty-eight percent were Catholic or Christian schools whilst 45.5% did not have religious background.

### Students' perception of their own eating habit

According to the study, most of the students claimed that they had a very healthy, healthy or acceptable eating habit (89.4%), while only 3.6% of the students said their eating habit was unhealthy or very unhealthy.

### Knowledge of healthy eating

Students were asked to choose the healthier options among six different pairs of food or drinks. They were also tested for ability to rank food groups correctly in the Food Guide Pyramid. In general, they had good knowledge on healthy food with the mean Knowledge Index (KI) of 8.1 out of a 10-point scale.

The subgroup analysis showed that the mean KI of female students was significantly higher than that of male students by 0.5 point (8.4 vs. 7.9,  $p<0.0001$ ).

### **Attitude to food preference**

Attitude Index (AI) of students on food preference showed that the students generally did not favour healthy food. The mean score of AI was only 2.6 out of a 6-point scale. In particular, 18.9% of the students scored zero. Among the six food pairs, it is noteworthy that more students showed preference on unhealthy food such as hamburger with French fries, fried rice noodles with beef, ice-cream and hot dog.

The subgroup analysis showed that female students and those perceiving themselves as healthy (both with mean AI 2.8) had better attitude towards food preference than their counterparts, where the means of male students and those perceiving themselves as unhealthy were 2.39 and 1.84 respectively ( $p<0.0001$ ). Besides, students with higher KI were found having higher AI ( $p<0.0001$ ).

### **Students' eating practice**

The students' eating practice was evaluated based on whether they had breakfast and their daily eating frequency on different types of food.

The majority (85.7%) of the students had breakfast on the day of the survey. Concerning their daily food consumption, most of them (70.7% to 93%) consumed dairy products, vegetables, grains and cereals, meat, fish, eggs, peas and beans with appropriate frequency. Only about half, however, had a healthy habit of eating fruit (56.7% ate twice or more per day). Besides, only 8.7% to 24.7% of the students did not take unhealthy food such as drinks with added sugar, fried and deep-fried food, food high in sugar, food high in fat and food high in salt.

Similar to the AI, a rather low mean of Practice Index (PI), 5.3 in a 11-point scale was obtained. The subgroup analysis showed that the following groups of students had a significantly higher mean PI than their counterparts: (1) female (5.47 vs 5.22 (male),  $p<0.0001$ ); (2) parents made decision on food at home (5.40 vs 5.01 (student),  $p<0.0001$ ); (3) perceived their diet as healthy (5.44 vs 4.30 (unhealthy),  $p<0.0001$ ); (4) studied in whole-day schools (5.36 vs 4.89 (half-day schools),  $p<0.0001$ ). The PI of students was found significantly associated with AI and KI ( $p\leq 0.0001$ ).

### **Parents' perception of their child's eating habit**

Consistent with students' self-report, most of the parents claimed that their children (72.9%) had breakfast every day. A majority of them (82.6% to 97.6%) indicated that their children consumed grains and cereals, meat, fish, eggs, peas and beans, vegetables and fruit at least once per day at home. Only 64.8% of the parents were aware of their children's eating habit on dairy products. On the other hand, only 5.5% to 6.9% of the parents claimed that their children never took food high in sugar, fried and deep-fried food, and drinks with added sugar. Ten percents and 20.6% of the parents claimed that their children never ate food high in fat and salt respectively.

For those schools with tuck shops, less than 40% of the parents knew what kind of food/drinks their children bought there. When asked whether their children brought snacks to school, more than half of the parents (61.6%) said their children did so, and the popular snacks were biscuit (69%) and candy (33.8%).

In contrast to students' own perception, only half of the parents (58.3%) considered their children's eating habit as healthy. It is noteworthy that 26.4% of the parents did not have any idea on the healthiness of their children's diet.

Nearly two-fifth of the parents (39.3%) claimed that healthy eating was not easy to sustain, with the common reasons such as "having no time to prepare healthy food" (28.4%), "healthy food does not taste good" (25.7%), and "healthy food lacks of variety" (17.1%).

## **Consideration in choosing food**

Among the students, cleanliness and hygiene was the top consideration when choosing food (81.9%), followed by taste (67.1%), freshness (63.8%), nutritional value (62.1%) and price (53.5%).

Parents opined that cleanliness and hygiene (81.5%) was the key consideration in choosing food, followed by nutritional value (77.5%), freshness (70.9%), preference and taste of the children (64.6%). Besides, taste (41.9%) and price (39.6%) also played a role in choosing food for children.

## **Consideration in choosing lunch caterer**

When school representatives choose lunch caterer, nutritiveness and healthiness of food was the most important factor, with a total score of 1,313, followed by record of food safety incident (scored 610), company size (scored 525), food price (scored 519) and taste of food and food preference of students (scored 492).

## **Measures to promote healthy eating habit**

Regarding measures to promote healthy eating habits, both parents and school representatives strongly supported offering health education to students (59.8% and 84.1% respectively). Promoting healthy eating policy in school also received considerable support from parents and school representatives (51.1% and 51.3% separately).

### **Schools' eating environment**

Nearly 62% and 48% of the primary schools had healthy lunch and healthy snack policy respectively. However, about three-tenth (27.3%) of the primary schools did not have any healthy eating policy.

Most schools arranged lunch to students either through ordering lunch boxes from food caterers (81.4%) or commissioning caterer to serve lunch at school (17.3%). The lunch caterers (82.9%) and teachers (77.2%) were the major decision makers on school lunch menus. Most of the schools had drinking fountain facilities (83.1%), while about half had tuck shops (53.9%) or vending machines (56.5%). The vending machines in school mostly provided drinks with added sugar in packets or bottles (95.3%), fresh milk and soya milk (75.7%) and distilled water/ mineral water (63%).

The study also showed that most of the primary schools did not stipulate many regulations for lunch caterers or tuck shop / vending machine contractors. The mean Regulation Index (RI) for school was very low (3 out of a 10-point scale). Among those schools with regulations, about half or less than half of them requested the selling of healthy food including fruit juice or dried fruit (52%), fresh fruit (45%) and vegetables (36%) in the tuck shops, and 52% of them restricted the selling of drinks with added sugar in the vending machines. Similarly, less than half of them (42.7%) stipulated the amount of vegetables in the lunch box. In contrast, there was a strong demand from parents for stipulations on the amount of major food groups (85% to 90%), including vegetables and fruit, to be provided in lunch and compulsory sale of fruit (63%) and vegetables (56%) in tuck shop.

### **Factors contributing to students' eating practice**

The linear regression showed that students' eating habits were mainly associated with (1) student's perception of his / her own diet as healthy (coefficient=0.74,  $p<0.001$ ), (2) parents' perception of their children's diet as healthy (coefficient=0.34,  $p<0.001$ ), (3) students with home-provided lunch (coefficient=0.34,  $p=0.007$ ), (4) restricted sale of drinks with added sugar at tuck shop (coefficient= -0.25,  $p<0.001$ ), (5) students' attitude towards eating preference (coefficient=0.22,  $p<0.001$ ).

These factors altogether accounted for about one-tenth (11.5%) of variations of students' eating practice. However, the result should be interpreted with caution as there were other factors influencing the students' eating practice, such as familial factors, product marketing, food availability and the mass media which were not investigated in the study. Moreover, the computed PI was derived from non-validated food frequency questions and the cut-off between healthy and unhealthy habits was a best estimate only.



## Chapter 1: Introduction

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**Background** The Department of Health (DH) has recorded a rising trend of obesity among primary school students, from 16.4% in 1997/1998 to 18.7% in 2004/05.<sup>1</sup> That is to say, almost one in every five schoolchildren is obese. In this light, initiatives which aim at preventing childhood obesity should be implemented.

Since 1993, the Education and Manpower Bureau (EMB) has introduced whole-day primary schooling progressively, students spend as many as eight hours in the whole-day school and may consume multiple servings of food during lunch and recess time. Schools usually contract out the lunch services. A local survey revealed that more than half of Hong Kong primary school students consumed lunch box provided by school lunch providers in 2003.<sup>2</sup> Besides, another study showed that fried snacks and candies were the most popular snacks which primary students purchased in school tuck shops.<sup>1</sup> Schools must therefore exercise their power in the marketplace by giving preference to food that enhances students' health.

Promoting healthy eating habit among schoolchildren is one of the new initiatives in the 2005 - 2006 Policy Address. To prepare for the coming territory-wide "EatSmart@school.hk" campaign (the Campaign) organised by the Department of Health (DH), a **Baseline Assessment of Promoting Healthy Eating in Primary Schools** has been conducted in the first quarter of 2006. It served as a baseline assessment of knowledge and practices of and attitudes to healthy eating among primary school students and the existing nutritional environments of primary schools. The results of this study would be used as a reference in developing relevant health promotion resources and for subsequent evaluation of the Campaign.

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## **Chapter 1: Introduction**

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### **Research objectives**

The objectives of this study were:

- To study the knowledge and practices of and attitudes to healthy eating among primary school students, and the attitude towards healthy eating in school among the parents;
  - To investigate the nutritional environments among primary schools, such as types of food available in lunch boxes, tuck shops and vending machines and policy stipulated by schools;
  - To find out the factors affecting students' eating behaviour and promotion of healthy eating in primary schools;
  - To give recommendation on strategic and resources development of the "EatSmart@school.hk" campaign.
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## Chapter 2: Research Methodology

This chapter describes the methodology used in this study.

### Target participants

Target groups of this study were:

- Primary 4 (P4) and Primary 5 (P5) students;
- Parents of the P4 and P5 students; and
- Principals / school representatives of primary schools in Hong Kong.

### Sample design

A stratified cluster sampling method was used in selecting schools. Based on the school lists obtained from EMB, schools of different types were drawn from 18 districts in proportion to the number and types of schools in each district.

The following table illustrates the number of schools drawn in each district for the study. The cut-off numbers of schools were based on the distribution of primary schools in Hong Kong.

**Table 2.1 Number of schools drawn for the study**

Government Primary Schools and Aided Primary Schools		Others (including Schools under Direct Subsidy Scheme (DSS), Schools run by English Schools Foundation (ESF) and Private Schools)	
No. of schools in each district	No. of schools drawn	No. of schools in each district	No. of schools drawn
14 or below	0	4 or below	0
15 – 29	1	5 – 9	1
30 – 44	2	10 or above	2
45 or above	3		

## **Chapter 2: Research Methodology**

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### **Ethics**

The study protocol together with a copy of the questionnaires has been submitted to the Ethics Committee of DH. Ethical approval was gained prior to the commencement of the study.

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### **Questionnaire design**

The questionnaires were designed by DH. Due reference had been made to similar local surveys, namely "Colourful and Bright Fruits and Vegetables Project" organised by the Centre for Health Education and Health Promotion, the Chinese University of Hong Kong (2005)<sup>3</sup>, the "Dietary and Health Survey of Primary Students" conducted by Department of Community Medicine, University of Hong Kong (2002)<sup>4</sup>, "Feeding the Future – a Study on Students Eating Arrangements" performed by the Hong Kong Federation of Youth Groups (1996).<sup>5</sup>

The questionnaires were derived in both English and Traditional Chinese. The following parts were covered in three sets of questionnaires:

#### **Questionnaire for P4 and P5 students (with 8 coded questions, S1-S7)**

- Students' knowledge of healthy eating
- Students' attitude towards healthy eating
- Students' eating habit (i.e. practice)

#### **Questionnaire for parents (with 12 coded questions, P1-P12)**

- Practice of healthy eating among their children at home
- Parents' attitudes towards healthy eating in school

#### **Questionnaire for schools (with 18 coded questions, T1-T18)**

- Information of nutritional environment in school
- Eating policy
- Lunch arrangement
- Eating facilities

Copies of the questionnaires are enclosed in Appendix of this report.

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## Chapter 2: Research Methodology

### Information on lunch menus, tuck shops and vending machines

In addition to these three sets of questionnaires, a one-week lunch menu, standardised recipe for lunch menu selections, list of food / drinks available in the tuck shops and the vending machines were collected from principals or school representatives. Analysis on those collected information was carried out by DH and the results were presented in two supplementary reports.

Scanning and Verification System (SVS) was applied in the questionnaire format. Returned questionnaires were optically read with scanner to ensure high-speed and accurate data processing.

The questionnaires were designed in a manner to avoid prompting the participants and to minimise ambiguity. They had been pre-tested in a pilot study for identifying difficulties and vagueness which participants might encounter.

As the questionnaires were anonymous, same serial numbers and barcodes were assigned to students and their parents for matching purpose.

### Pilot testing

A pilot test was conducted from 17 to 20 January 2006 to try out the length, order and wordings along these three sets of questionnaires. Sixty-five questionnaires were completed with 30 for students, 30 for parents and 5 for schools. The breakdowns are as follows:

**Table 2.2 Number of completed questionnaires in the pilot**

Questionnaire	No. of Chinese Version	No. of English Version	Total
Students	25	5	30
Parents	25	5	30
Schools	3	2	5

The layout (i.e. checkbox) and wordings of the questionnaires were fine-tuned based on the findings of the pilot test, with amendments made with DH's approval.

## **Chapter 2: Research Methodology**

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**Recruitment** DH was responsible in recruiting schools for participation. Invitation letters were sent to 192 schools together with the study brief between late November 2005 and early January 2006. Schools were drawn randomly and in proportion to the total number of schools in each district. One-third of them (64 schools) replied that they were interested to take part in this study.

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**Study coverage** Based on the above cut-off criteria, a total of 44 primary schools from 18 districts (6.1% of the total number of primary schools in Hong Kong) were recruited for this study. These schools were randomly selected according to the quota set for each district. Among them, 32 were government or aided primary schools and 12 belonged to the “Others” grouping including DSS schools, ESF schools and private schools.

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## Chapter 2: Research Methodology

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### **Data collection method**

Self-administered questionnaire was employed as the data collection method for this study. Three separate sets of questionnaires for students, parents and school principals / representatives were designed. Questionnaires for students were printed in colour while questionnaires for parents and schools were printed in black and white. All three sets of questionnaires were delivered to the 44 recruited schools for further distribution.

The questionnaires for students were distributed to P4 and P5 students of the recruited schools through their teachers. Students were asked to complete the questions within a classroom session.

Parents of P4 and P5 students were given another questionnaire via their children for completion at home. Such questionnaires completed by the parents were then returned to teachers by the children.

Principals / school representatives were responsible to fill in the questionnaire for schools.

Souvenirs were presented to students and principals / school representatives as a token of thanks for their participation after completion of the questionnaires.

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### **Fieldwork period**

All three sets of questionnaires were distributed to the 44 schools between 13 and 15 February 2006. The completed questionnaires were collected from 22 February 2006 to 6 March 2006.

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## **Chapter 2: Research Methodology**

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### **Quality control**

Editing specification was designed for performing logical checking on the completed questionnaires. Besides, completed questionnaires with more than half missing answers were rejected. There were also cross checking between questionnaires completed by the students and their parents with the same serial number for consistencies of background information such as class, gender and date of birth.

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### **Quality control result**

The questionnaires collected were scrutinised with strict quality checking procedures before using the data for further processing.

According to the quality control rule, questionnaires with more than half of the questions unanswered were regarded as invalid. Forty-nine questionnaires for students and 256 questionnaires for parents were identified as such and permanently excluded from the database.

Basic background information of students and parents was also cross-checked to make sure there is no mistaken pairing. For the same pair of questionnaires returned (i.e. with identical serial number), if unmatched gender or date of birth were found, these questionnaires would not be combined to form a complete record for sub-group analysis and statistical tests. However, these standalone questionnaires together with those questionnaires with unmatched serial numbers were included for the descriptive statistics. Questionnaires with the aforesaid errors were:

**Table 2.3 Quality control result**

<b>Reason</b>	<b>Number</b>
Unmatched serial number	234
Unmatched gender	45
Unmatched date of birth	400

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## Chapter 2: Research Methodology

### Sampling

A total of 9,831 sets of questionnaires for students and parents were distributed, with 9,222 and 9,014 questionnaires returned from students and parents respectively. The corresponding response rates were 93.8% and 91.7%.

The profile of the students and parents participated were as follows:

**Table 2.4 Demographics of students**

Class	Sample (%)	Student population of P4 and P5 in HK (%)*
Primary 4	48.5	48.2
Primary 5	51.5	51.8
<b>Gender</b>		
Male	52.1	51.8
Female	47.9	48.2

Note: \*Internal data provided by EMB

**Table 2.5 Demographics of parents**

Gender	Sample (%)	General population in HK (%)*
Male	22.8	49.0
Female	77.2	51.0
<b>Education level</b>		
Primary or below	14.1	28.9
Secondary	61.3	45.2
Post-secondary or above	24.6	25.8
<b>Monthly household income</b>		
\$9,999 or less	32.2	24.1
\$10,000 - \$19,999	28.0	28.3
\$20,000 - \$29,999	12.7	18.7
\$30,000 - \$39,999	6.9	10.7
\$40,000 - \$59,999	7.8	9.6
\$60,000 or above	12.4	8.7

Note: \*2001 population census produced by Census and Statistics Department

## **Chapter 2: Research Methodology**

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As for the questionnaire for schools, all 44 recruited schools returned their questionnaires. The response rate for schools was 100%.

The characteristics of schools were listed below:

**Table 2.6 School type by district**

<b>School type by district</b>	<b>Sample (%)</b>	<b>All primary schools in HK (%)*</b>
Hong Kong Island – Government / Aided Primary Schools	11.4	12.7
Hong Kong Island – DSS / Private / International Schools	13.6	6.1
Kowloon – Government / Aided Primary Schools	20.5	23.5
Kowloon – DSS / Private / International Schools	11.4	6.4
New Territories – Government / Aided Primary Schools	40.9	48.3
New Territories – DSS / Private / International Schools	2.3	3.0

Note: \*Information collected from EMB website on Nov 2005

**Table 2.7 School characteristics**

<b>School mode</b>	<b>Sample (%)</b>	<b>All primary schools in HK (%)*</b>
Half-day School	6.8	21.5
Whole-day School	93.2	78.5
<b>School type</b>		
Co-educational School	97.7	95.0
Boys' School	2.3	1.9
Girls' School	-	3.0
<b>Religion</b>		
School without religious background	45.5	(not available)
Christian School	31.8	(not available)
Catholic School	15.9	(not available)
Buddhist School	6.8	(not available)

Note: \*Information collected from EMB website on Nov 2005

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## Chapter 2: Research Methodology

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### Sampling error

The sampling error of the questionnaire for students at a 95% Confidence Interval (C.I.) was 1.02%. It was computed by

$$1.96 \times \left\{ \sqrt{\frac{(0.5)(0.5)}{9222}} \right\}$$

The sampling error of the questionnaire for parents at a 95% C.I. was 1.03%. It was computed by

$$1.96 \times \left\{ \sqrt{\frac{(0.5)(0.5)}{9014}} \right\}$$

For questionnaire for schools, the sampling error at a 95% C.I. was 14.77%. It was computed by

$$1.96 \times \left\{ \sqrt{\frac{(0.5)(0.5)}{44}} \right\}$$


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## Chapter 2: Research Methodology

### Weighting

The students' data was projected to all P4 and P5 students in Hong Kong by district (Hong Kong Island/ Kowloon/ New Territories), gender (male/ female), class (P4/ P5) and school type (Government Schools & Aided Schools/ DSS Schools & Private Schools & International Schools). The weighting factors were calculated by dividing the total of such students in Hong Kong with the actual number of samples from the study, which were shown in Table 2.8.

**Table 2.8 Weighting factors for students' and parents' data**

Category	Number of samples	Total populations	Weighting factor for students
Hong Kong Island / Male / P4/ Government & Aided Primary Schools	217	5,007	23.07
Hong Kong Island / Male / P4/ DSS & Private & International Schools	222	1,719	7.74
Hong Kong Island / Male / P5/ Government & Aided Primary Schools	237	5,291	22.32
Hong Kong Island / Male / P5/ DSS & Private & International Schools	241	1,795	7.45
Hong Kong Island / Female / P4/ Government & Aided Primary Schools	174	4,564	26.23
Hong Kong Island / Female / P4/ DSS & Private & International Schools	318	1,743	5.48
Hong Kong Island / Female / P5/ Government & Aided Primary Schools	204	4,887	23.96
Hong Kong Island / Female / P5 / DSS & Private & International Schools	306	1,758	5.75

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**Table 2.8 Weighting factors for students' and parents' data (cont'd)**

Category	Number of samples	Total populations	Weighting factor for students
Kowloon / Male / P4 / Government & Aided Primary Schools	565	10,271	18.18
Kowloon / Male / P4 / DSS & Private & International Schools	292	2,093	7.17
Kowloon / Male / P5 / Government & Aided Primary Schools	580	11,011	18.98
Kowloon / Male / P5 / DSS & Private & International Schools	205	2,103	10.26
Kowloon / Female / P4 / Government & Aided Primary Schools	458	9,431	20.59
Kowloon / Female / P4 / DSS & Private & International Schools	185	2,110	11.41
Kowloon / Female / P5 / Government & Aided Primary Schools	431	10,095	23.42
Kowloon / Female / P5 / DSS & Private & International Schools	238	2,226	9.35

## Chapter 2: Research Methodology

**Table 2.8 Weighting factor for students' and parents' data (cont'd)**

Category	Number of samples	Total populations	Weighting factor for students
New Territories* / Male / P4 / Government & Aided Primary Schools	1,132	18,969	16.76
New Territories* / Male / P4 / DSS & Private & International Schools	20	676	33.80
New Territories* / Male / P5 / Government & Aided Primary Schools	1,274	20,723	16.27
New Territories* / Male / P5 / DSS & Private & International Schools	14	496	35.43
New Territories* / Female / P4 / Government & Aided Primary Schools	1,081	17,398	16.09
New Territories* / Female / P4 / DSS & Private & International Schools	11	612	55.64
New Territories* / Female / P5 / Government & Aided Primary Schools	1,189	19,290	16.22
New Territories* / Female / P5 / DSS & Private & International Schools	8	458	57.25
<b>Total</b>	<b>9,602<sup>#</sup></b>	<b>154,726</b>	<b>-</b>

Note: \* Sai Kung and Islands were grouped under New Territories.

# The total of samples was greater than 9,222 (number of valid questionnaires for students) since some records were the standalone student or parent questionnaires which had an unmatched gender or dates of birth between the pair of the questionnaire for students and the one for parents.

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Similarly, all school data was projected to all primary schools in Hong Kong by district (Hong Kong Island / Kowloon / New Territories) and school type (Government Schools & Aided Schools / DSS Schools & ESF Schools & Private Schools). The weighting factors were calculated by dividing the total of such schools in Hong Kong with the actual number of samples from the study which were shown in Table 2.9.

**Table 2.9 Weighting factors for school data**

Category	Number of samples	Total populations	Weighting factor for students
Hong Kong Island – Government & Aided Primary Schools	5	92	18.40
Hong Kong Island – DSS & Private & International Schools	6	44	7.33
Kowloon – Government & Aided Primary Schools	9	170	18.89
Kowloon – DSS & Private & International Schools	5	46	9.20
New Territories* – Government & Aided Primary Schools	18	350	19.44
New Territories* – DSS & Private & International Schools	1	22	22.00
<b>Total</b>	<b>44</b>	<b>724</b>	<b>-</b>

Note: \*Sai Kung and Islands were grouped under New Territories.

All descriptive percentages reported were after weighting for district, school type, students' gender and class studied. When performing statistical tests, weighted data should be used; however, due to the large sample size after weighting, it would be too sensitive for statistical tests. A weighted back method should be adopted to reduce the weighted data back to the original size with the students' characteristics included (i.e. by dividing the weighting factors for students' data with the total number of such students in Hong Kong and multiplying with the student sample size). This method would involve some non-integer weighting factors which SPSS is unable to handle for performing non-parametric tests. As a result, the original raw data (i.e. without weighting) was used in the statistical tests.

## **Chapter 2: Research Methodology**

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### **Data processing and analysis**

Descriptive statistics were used to summarise the findings of the study and they were reported in percentages, means, standard deviations (S.D.) and C.I., wherever appropriate.

Cross-tabulations were used to conduct the subgroup analyses. Test for association between knowledge, attitude and practices about healthy eating, as well as test for association between students, parents and schools were performed where appropriate.

Univariate analysis was conducted for identifying potential factors. Then multivariate regression was used to determine the prominent factors and respective relationships with students' eating practice (Practice Index).

Some percentages in the descriptive figures might not add up to the total or 100% because of rounding. Also, for the case of multiple answers, the summation of percentages might exceed 100% since more than one answer could be selected. Besides, the sample bases for each question might vary due to the missing answers in the completed questionnaires.

For those records without student's / parents' personal information, they were kept for descriptive statistics. However, they were excluded for paired data analysis between questionnaires for students and parents.

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## Chapter 2: Research Methodology

### Re-grouping of data

Some of the variables have been regrouped in binary format or into a smaller number of categories for analysis. Questions of which the data had undergone re-grouping are listed as below:

**Table 2.10 Re-grouping of variables**

Questions	Original levels	Re-grouped levels
<b>Students' perception of their own eating habit (S7)</b>	Very healthy	Healthy
	Healthy	
	Acceptable	
	Unhealthy	Unhealthy
	Very unhealthy	
<b>Monthly household Income</b>	\$3,999 or less	HK\$9,999 or less
	\$4,000-4,999	
	\$8,000-9,999	
	\$10,000-14,999	\$10,000 - \$19,999
	\$15,000-19,999	
	\$20,000-24,999	\$20,000 - \$29,999
	\$30,000-39,999	\$30,000 - \$39,999
	\$40,000-59,999	\$40,000 - \$59,999
	\$60,000 or above	\$60,000 or above
<b>Parents' level of education</b>	Primary education or below	Primary education or below
	Secondary education (Secondary 1-3)	Secondary
	Secondary education (Secondary 4-5)	
	Matriculation	Post-secondary or above
	College	
<b>Knowledge Index</b>	0 to 10 (ordinal)	0-5
		6-7
		8-9
		10
<b>Attitude Index</b>	0 to 6 (ordinal)	0
		1-2
		3-4
		5-6
<b>Practice Index</b>	0 to 11 (ordinal)	0-3
		4
		5
		6
		7-11
<b>Regulation Index</b>	0 to 10 (ordinal)	0
		1-2
		3-4
		5-6
		7-10

## **Chapter 2: Research Methodology**

### **Composite variables**

Four new variables were derived from the data collected from the questionnaires. They are defined as below:

#### **Knowledge Index (KI)**

The Knowledge Index was computed to measure how much the students knew about healthy food choices and the Food Guide Pyramid (i.e. S4a-f and S5 of the questionnaire for students). If students chose the healthier food out of the two options provided in S4a-f, one score would be assigned to the KI. Besides, if students answered correctly in the Food Guide Pyramid in S5 then one score would be assigned to the KI.

**Table 2.11 Calculation of KI**

<b>S4 Known as healthier</b>	<b>Healthier option</b>	<b>Knowledge Index</b>
S4a	Yogurt	+1
S4b	Raisin wholemeal bread	+1
S4c	Soya sauce drumstick	+1
S4d	Pure orange juice	+1
S4e	Chicken rice with vegetables	+1
S4f	Spaghetti with fresh tomatoes and beef	+1
<b>S5 Food Guide Pyramid</b>	<b>Correct answer</b>	<b>Knowledge Index</b>
Eat the least	“oil, salt and sugar”	+1
Eat moderately	“dairy products, meat, fish, eggs, peas and beans”	+1
Eat more	“vegetables, gourds and fruit”	+1
Eat most	“grains and cereals”	+1

The range of KI was from 0 to 10. The higher the KI, the stronger knowledge the students had.

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### Attitude Index (AI)

The Attitude Index was computed to measure the healthiness of food preference of students. In other words, it represents the students' attitude towards choosing healthy food in their diet. The AI was generated by S1a-f of the questionnaire for students. If students chose the healthier food out of the two options provided, one score would be assigned to the AI.

**Table 2.12 Calculation of AI**

<b>S1 Prefer to eat</b>	<b>Healthier option</b>	<b>Attitude Index</b>
S1a	Yogurt	+1
S1b	Raisin wholemeal bread	+1
S1c	Soya sauce drumstick	+1
S1d	Pure orange juice	+1
S1e	Chicken rice with vegetables	+1
S1f	Spaghetti with fresh tomatoes and beef	+1

The range of AI was between 0 and 6. The higher the AI, the better attitude the student had in choosing healthy food.

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## **Chapter 2: Research Methodology**

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### **Practice Index (PI)**

The Practice Index was computed to measure the healthiness of students' eating habits. It was generated by S2 and S3a-j of the questionnaire for students. If students claimed they ate breakfast on that day, one score would be assigned to the PI. Also, if students had a good eating habit on each food type listed in S3a-j, one score would be assigned to the PI as well.

**Table 2.13 Calculation of PI**

<b>Question</b>	<b>Healthy practice</b>	<b>Practice Index</b>
S2	Had breakfast today	+1
S3a. Fruit	Eat at least twice/day	+1
S3b. Vegetables	Eat at least twice/day	+1
S3c. Dairy products	Eat at least once/day	+1
S3d. Meat, fish, eggs, peas and beans	Eat at least once/day	+1
S3e. Grains and cereals	Eat at least twice/day	+1
S3f. Fried and deep-fried food	Never	+1
S3g. Drinks with added sugar	Never	+1
S3h. Food high in sugar	Never	+1
S3i. Food high in salt	Never	+1
S3j. Food high in fat	Never	+1

The PI ranged between 0 and 11. The higher the PI, the healthier eating practice the students had. However, if more than half of the related questions were not answered or answered as “don't know”, then no PI would be generated.

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### Regulation Index (RI)

The Regulation Index was computed to measure the degree of control imposed by schools over eating arrangement. It was generated by T8, T13, T14 and T18 of the questionnaire for schools.

**Table 2.14 Calculation of RI**

<b>T8. Requirement for lunch caterers</b>	<b>RI_T8</b>
a. Stipulation on the amount of grains and cereals provided in the lunch box every day	+1
b. Stipulation on the amount of vegetables provided in the lunch box every day	+1
c. Stipulation on the amount of meat, fish, poultry, eggs and legumes provided in the lunch box every day	+1
d. Limits on the frequency of using processed or preserved meat (e.g. sausage) in the lunch box per week	+1
e. Limits on the frequency of using deep-fried food (e.g. fried chicken wings, fried pork chop) as the main dish of the lunch box per week	+1
f. Stipulation on the frequency of serving fruit alongside lunch per week	+1
<b>T13. Request tuck shop to sell more healthy food</b>	<b>RI_T13</b>
a. Vegetables	+1
b. Fresh fruit	+1
c. Fruit juice or dried fruit	+1
<b>T14. Restrict tuck shop to sell unhealthy food</b>	<b>RI_T14</b>
a. Drinks with added sugar	+1
b. Food high in sugar	+1
c. Food high in salt	+1
d. Food high in fat	+1
<b>T18. Restrict the sales of unhealthy food or beverages at the vending machine</b>	<b>RI_T18</b>
a. Drinks with added sugar	+1
b. Food high in sugar	+1
c. Food high in salt	+1
d. Food high in fat	+1

## **Chapter 2: Research Methodology**

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RI was computed with the formula below:

$$RI = \frac{(RI\_T8 + RI\_T13 + RI\_T14 + RI\_T18)}{(T8\_no + T13\_no + T14\_no + T18\_no)} \times 10$$

It was loaded according to the availability of lunch arrangement, tuck shop and vending machine in the schools. The range of RI was from 0 to 10. The higher the RI, the more the control schools had on the nutritional environment.

The four indices given above were used to test their inter-relationship.

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## Chapter 3: Findings of the Study – Introduction

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This chapter presents a descriptive analysis of the study findings in the following aspects:

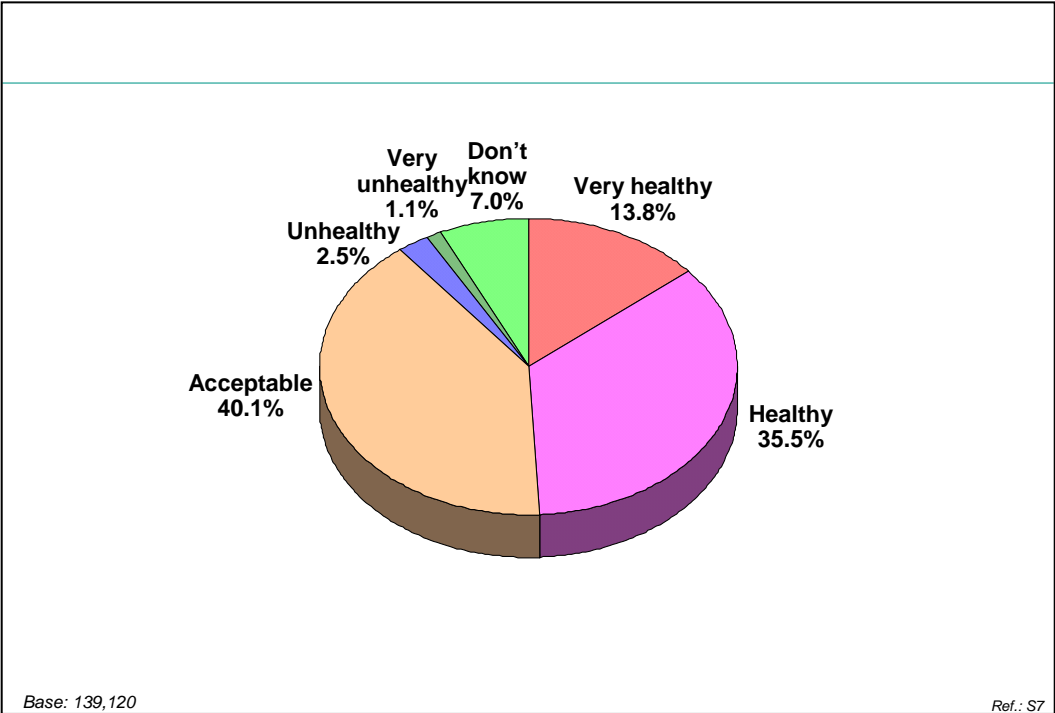
- Section 3.1 presents the findings related to the questionnaire for students;
  - Section 3.2 shows the results of the questionnaire for parents;
  - Section 3.3 states the findings of the questionnaire for schools; and
  - Section 3.4 gives a summary.
-

### 3.1: Findings of the Study – Students

**Students’  
perception of  
their own  
eating habit**

Most of the students claimed that they had a very healthy, healthy or acceptable eating habit (89.4%), whereas 3.6% of the students said their eating habit was unhealthy or very unhealthy.

**Chart 3.1.1 Students’ perception of their own eating habit (S7)**



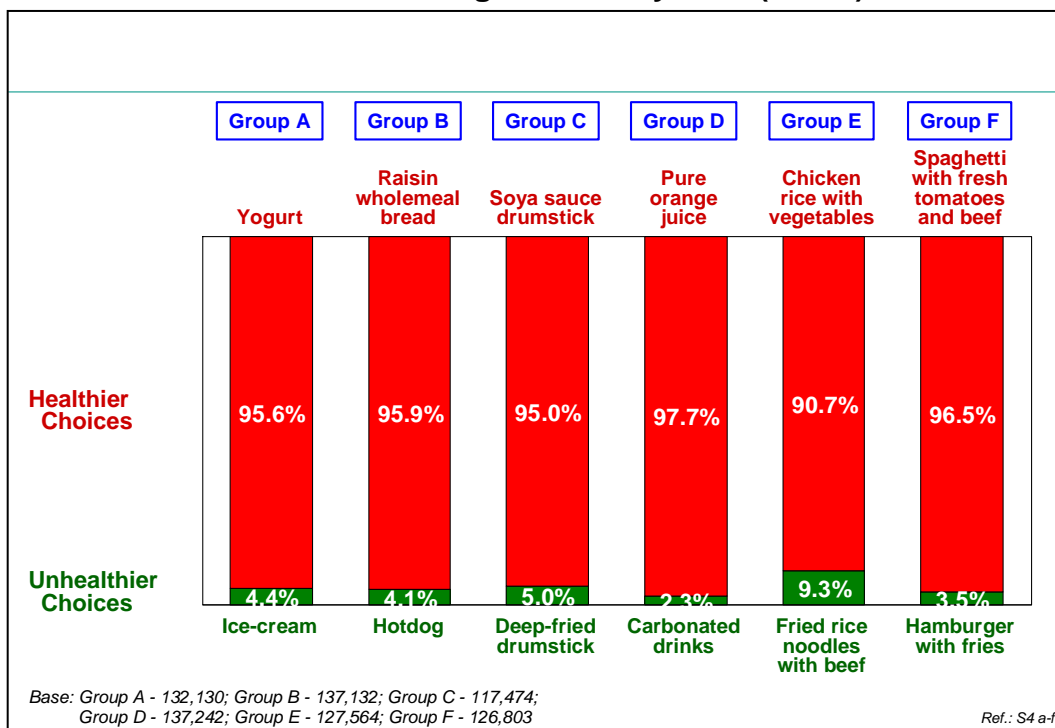


### 3.1: Findings of the Study – Students

#### Students' knowledge of healthy food

The majority of the students (ranging from 90.7% to 97.7%) chose the right answer out of the six pairs of food or drinks. Among different pairs of food or drinks, the knowledge of pure orange juice as healthier drink was the highest (97.7%) whereas the knowledge of chicken rice with vegetables as healthier food was the lowest (90.7%)

Chart 3.1.2 Students' knowledge of healthy food (S4 a-f)



### 3.1: Findings of the Study – Students

Again, most of the students could rank food groups correctly in the Food Guide Pyramid. 95.7% of students knew that they should have least oil, sugar and salt, followed by 88.1% of them who knew that they should eat dairy products, meats, fish, eggs, peas and beans moderately; 83.4% knew that they should eat more vegetables, gourds and fruit, and 87.8% knew that they should eat grains and cereals most.

**Table 3.1.1 Students' knowledge of Food Guide Pyramid (S5)**

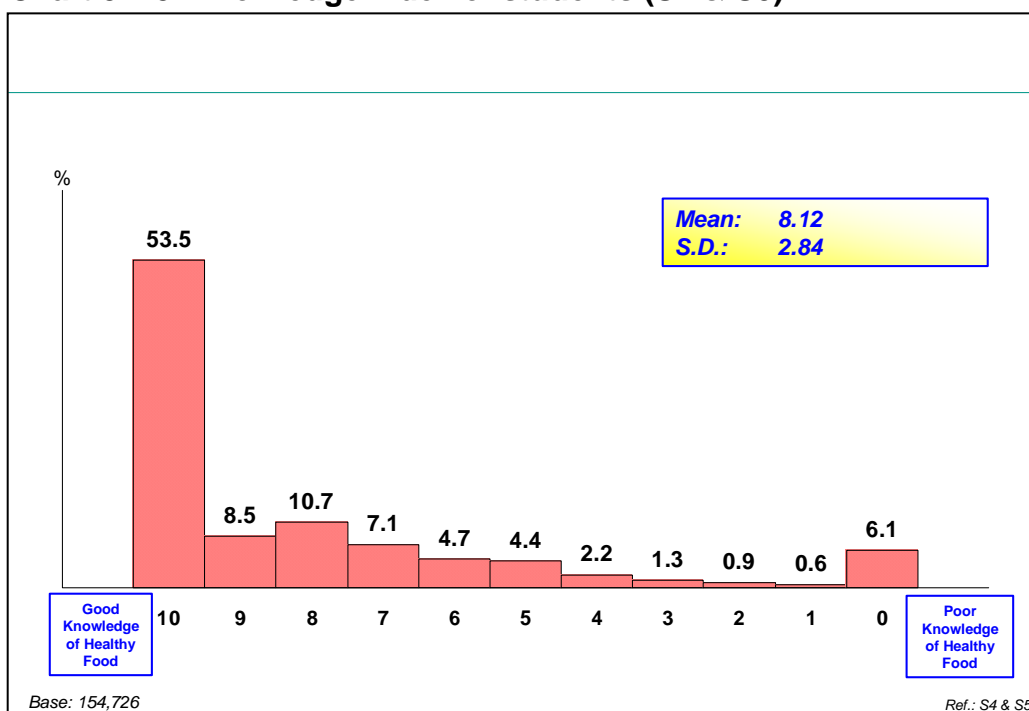
<b>Eating Amount Food type</b>	<b>Eat the most (%)</b>	<b>Eat more (%)</b>	<b>Eat moderately (%)</b>	<b>Eat the least (%)</b>
<b>Grains and cereals</b>	87.8*	7.9	3.6	0.9
<b>Vegetables, gourds and fruit</b>	8.6	83.4*	6.1	1.8
<b>Dairy products, meats, fish, eggs, peas and beans</b>	2.5	7.8	88.1*	1.6
<b>Oil, salt and sugar</b>	1.1	1.0	2.2	95.7*
<b>Total</b>	100.0	100.0	100.0	100.0
<i>Base:</i>	144,961	145,063	145,012	145,153

Note: \* indicates the correct answer

### 3.1: Findings of the Study – Students

Based on the knowledge of healthy food choices and Food Guide Pyramid, about half of the students (53.5%) got the maximum of 10 points in KI. The mean KI was 8.12, indicating that students generally had good knowledge of healthy food.

**Chart 3.1.3 Knowledge Index of students (S4 & S5)**

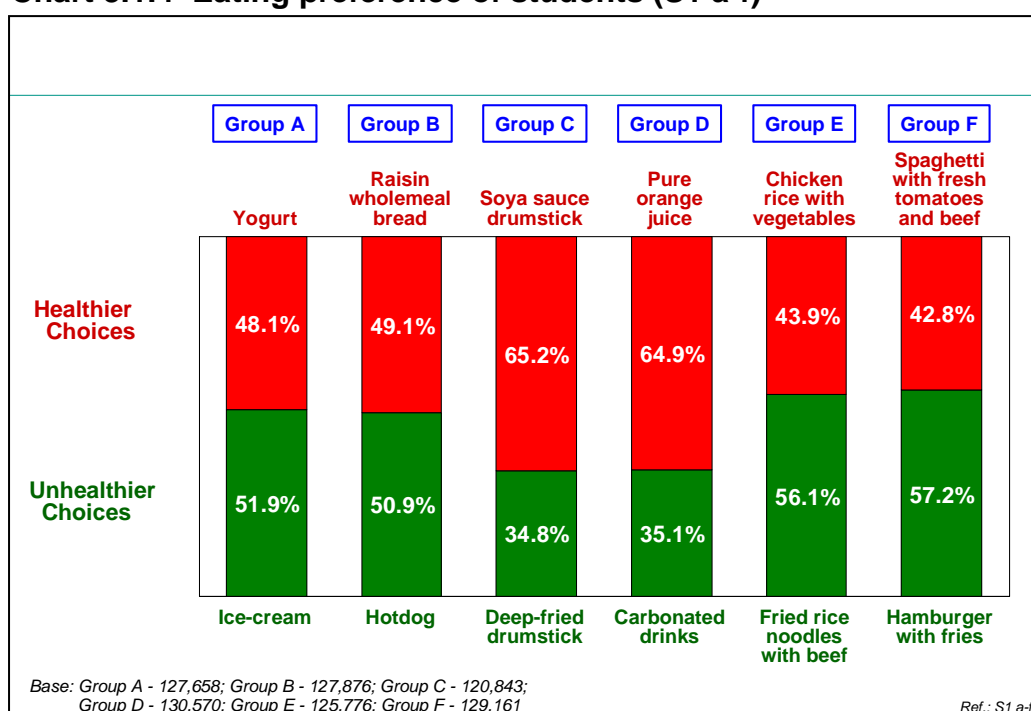


## 3.1: Findings of the Study – Students

### Students' attitude towards healthy food

Nearly two-third of the students preferred relatively healthier food choices like soya-sauce drumstick (65.2%) and pure orange juice (64.9%). It is noteworthy that about half of them showed preference on unhealthy food such as hamburger with fries (57.2%), fried rice noodles with beef (56.1%), ice-cream (51.9%) and hotdog (50.9%).

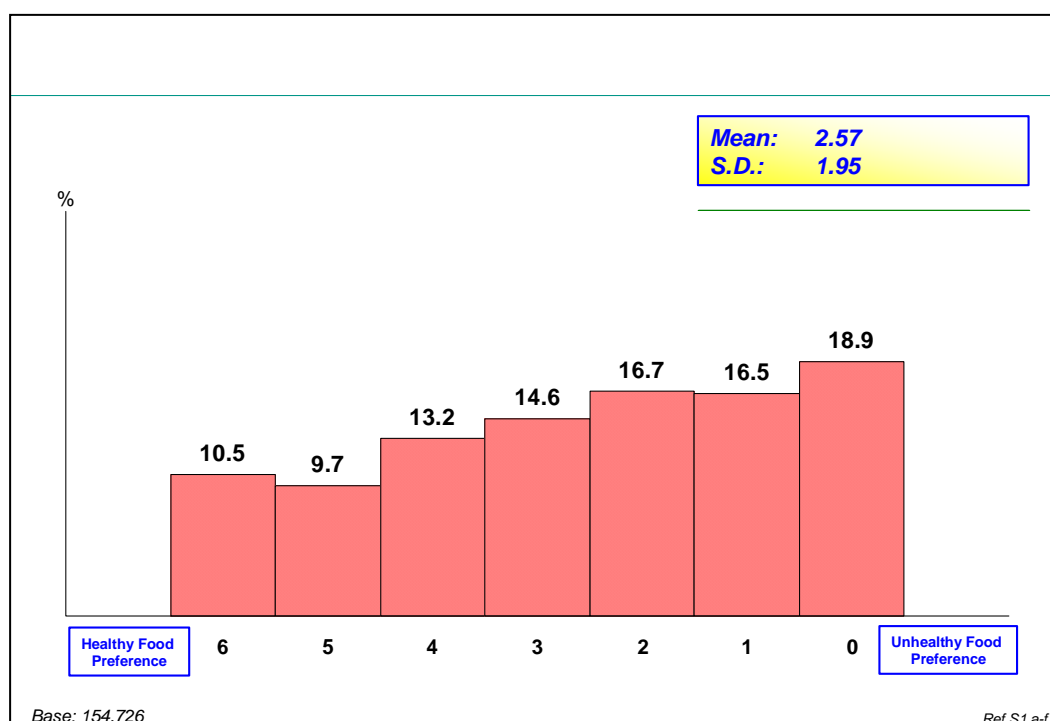
**Chart 3.1.4 Eating preference of students (S1 a-f)**



### 3.1: Findings of the Study – Students

Attitude Index (AI) of students on food preference showed that students generally did not have good eating preference. The higher the AI, the higher the tendency for students to choose healthy food. Two-third of them got an index score of 3 or less. In particular, 18.9% of them got zero point. Mean score of the AI was only 2.57 out of a 6-point scale

**Chart 3.1.5 Attitude Index of students on food preference (S1 a-f)**



### 3.1: Findings of the Study – Students

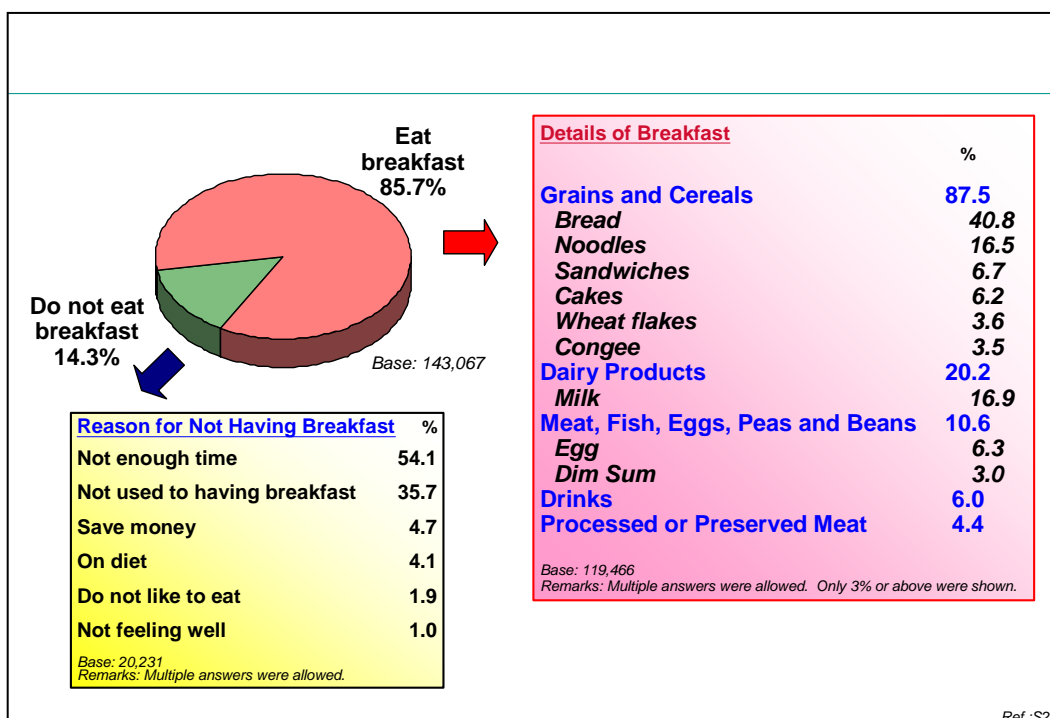
#### Students' eating practice

Regarding whether students had breakfast or not, the majority (85.7%) had breakfast on the day when they completed the questionnaire.

Among those who had breakfast, most of them (87.5%) had consumed grains and cereals, followed distantly by dairy products (20.2%), meat, fish, eggs, peas and beans (10.6%), drinks (6.0%) and processed or preserved meat (4.4%). For those who had eaten grains and cereals, bread (40.8%) was the most popular choice, followed by noodles (16.5%), and milk (16.9%) was the most common dairy product consumed. Among all types of meat, fish, eggs, peas and beans, egg (6.3%) gained the highest consumption by the students.

For those who did not have breakfast, more than half (54.1%) claimed that they did not have enough time; whereas 35.7% said that they were “not used to having breakfast”.

**Chart 3.1.6 Whether students ate breakfast or not on the survey day (S2)**



### 3.1: Findings of the Study – Students

In terms of the number of times that the students ate on average per day along the past one week, if the students fulfilled the following criteria, then his / her eating habit was classified as with appropriate frequency

**Table 3.1.2 Definition of ‘appropriate frequency’ on students’ eating practice**

S3a. Fruit	Eat at least twice/day
S3b. Vegetables	Eat at least twice/day
S3c. Dairy products	Eat at least once/day
S3d. Meat, fish, eggs, peas and beans	Eat at least once/day
S3e. Grains and cereals	Eat at least twice/day
S3f. Fried and deep-fried food	Never
S3g. Drinks with added sugar	Never
S3h. Food high in sugar	Never
S3i. Food high in salt	Never
S3j. Food high in fat	Never

Table 3.1.3 showed that the majority of the students consumed meat, fish, eggs, peas and beans (93.0% ate once or more per day), grains and cereals (87.3% ate twice or more per day), vegetables (75.8% ate twice or more per day) and dairy products (70.7% ate once or more per day) with appropriate frequency according to the above standard. However, just more than half of the students eating fruit with appropriate frequency (56.7% ate twice or more per day). Besides, only 8.7% to 24.7% of the students did not consume unhealthy food such as drinks with added sugar, fried and deep-fried food, food high in sugar, food high in fat and food high in salt.

### 3.1: Findings of the Study – Students

**Table 3.1.3 Frequency of eating different kinds of food (S3)**

Eating freq per day in the past 7 days (%)		More than twice	Twice	Once	Less than once	Never	Don't know	Total of which classified as <i>with appropriate frequency</i>
Food Category								
A	Fruit	34.7*	22.0*	33.7	4.9	1.6	3.1	56.7
B	Vegetables	45.8*	30.0*	18.1	2.8	1.3	2.0	75.8
C	Dairy products	19.7*	15.4*	35.6*	15.3	8.5	5.5	70.7
D	Meat, fish, eggs, peas & beans	37.2*	31.3*	24.5*	4.0	0.8	2.1	93.0
E	Grains & cereal	65.9*	21.4*	9.7	1.5	0.6	0.9	87.3
F	Fried & deep-fried food	7.7	10.1	29.4	38.8	9.3*	4.7	9.3
G	Drinks with added sugar	11.6	13.5	33.7	28.2	8.7*	4.3	8.7
H	Food high in sugar	11.3	13.3	31.3	28.8	10.6*	4.7	10.6
I	Food high in salt	4.8	7.1	22.1	34.3	24.7*	7.1	24.7
J	Food high in fat	8.6	9.6	27.8	34.7	13.6*	5.7	13.6

Note: \* classified as *with appropriate frequency*

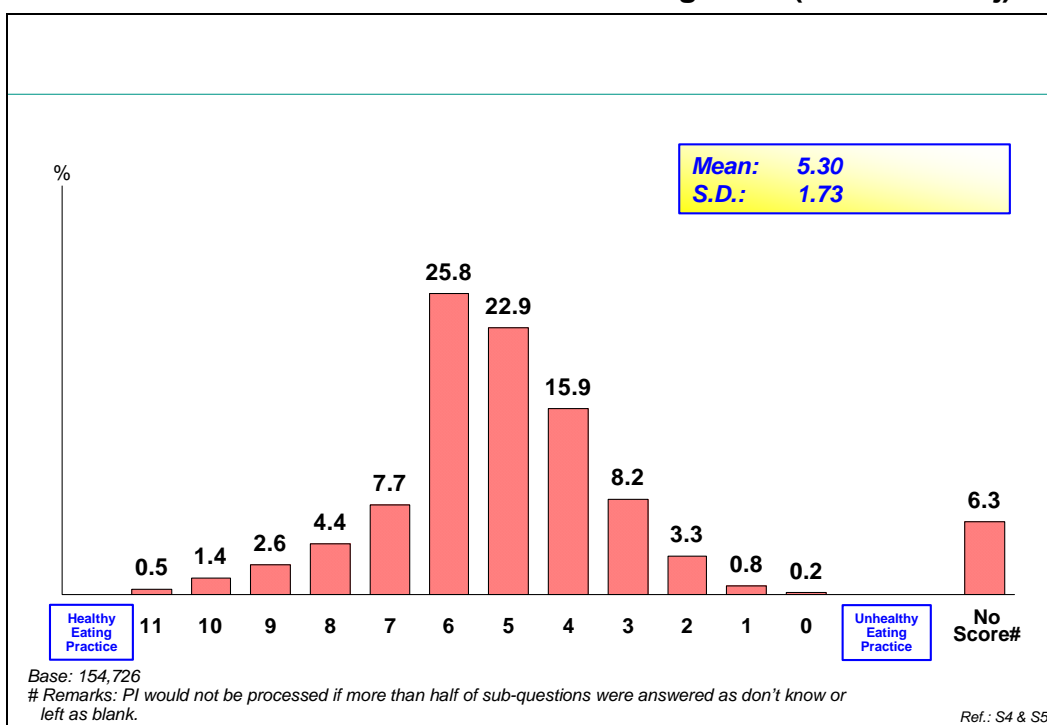
Base: Food category A - 145,497; Food category B - 144,974 ; Food category C - 144,043;  
Food category D - 144,566; Food category E - 143,121; Food category F - 145,013 ;  
Food category G - 145,553 ; Food category H - 145,580 ; Food category I - 145,939 ;  
Food category J - 145,994



### 3.1: Findings of the Study – Students

Derived from the students' eating practice on breakfast and the daily consumption on different types of food, a Practice Index (PI) of students' eating habit was generated. The higher the index, the healthier eating practice the students had. The mean of the P I was 5.30 along an 11-point scale. More than half of the students had a P I of 5 points or below (51.3%).

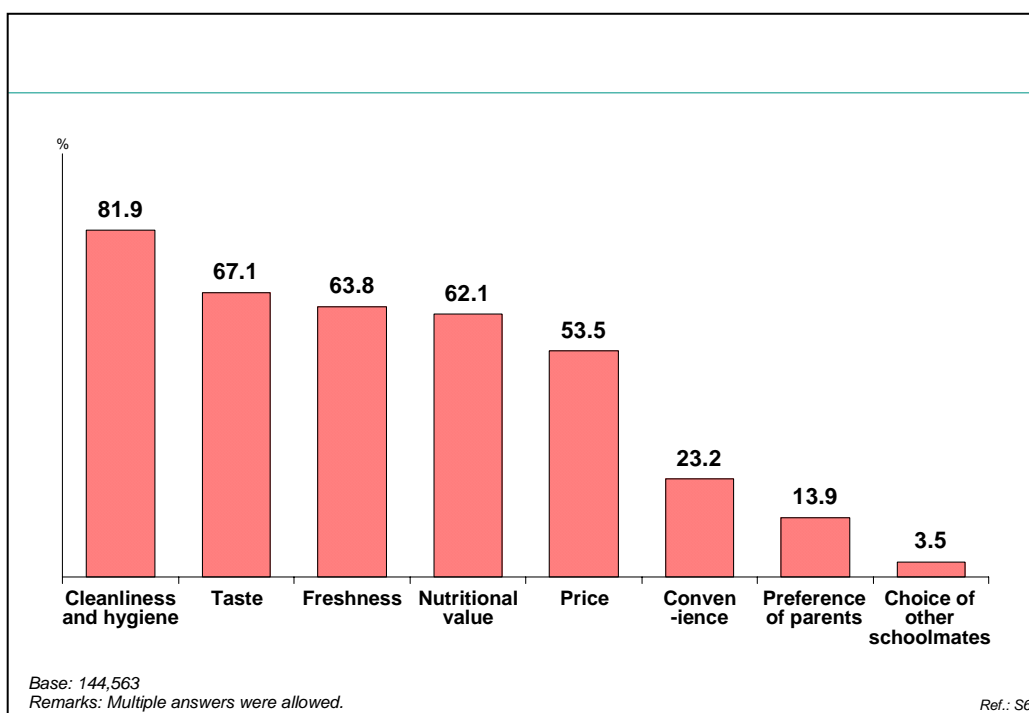
**Chart 3.1.7 Practice Index of students' eating habit (S2 and S3 a-j)**



### 3.1: Findings of the Study – Students

**Students’ consideration in food choice** Among the students, cleanliness and hygiene was the top consideration when choosing food (81.9%), followed by taste (67.1%), freshness (63.8%), nutritional value (62.1%) and price (53.5%).

**Chart 3.1.8 Students’ consideration in choosing food (S6)**

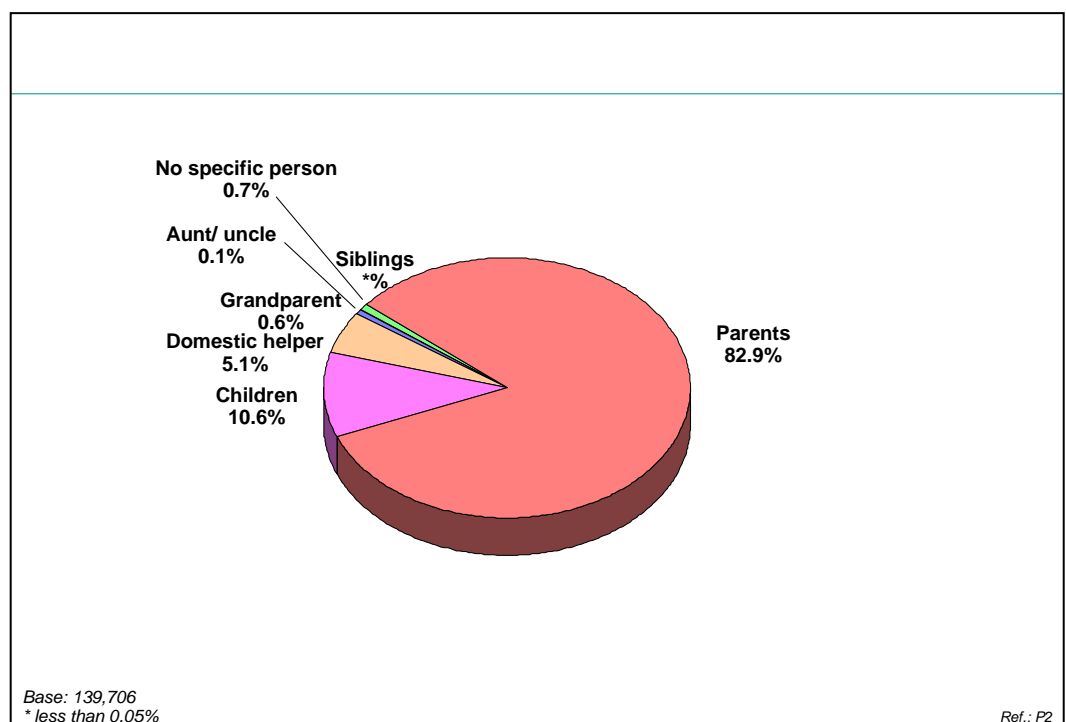


## 3.2: Findings of the Study – Parents

### Decision maker on food at home

Most of the parents (82.9%) were the decision makers on food at home; 10.6% of respondents allowed their children to choose food by themselves; 5.1% of respondents said domestic helpers were the decision makers on food at home.

**Chart 3.2.1 Decision maker on food (P2)**

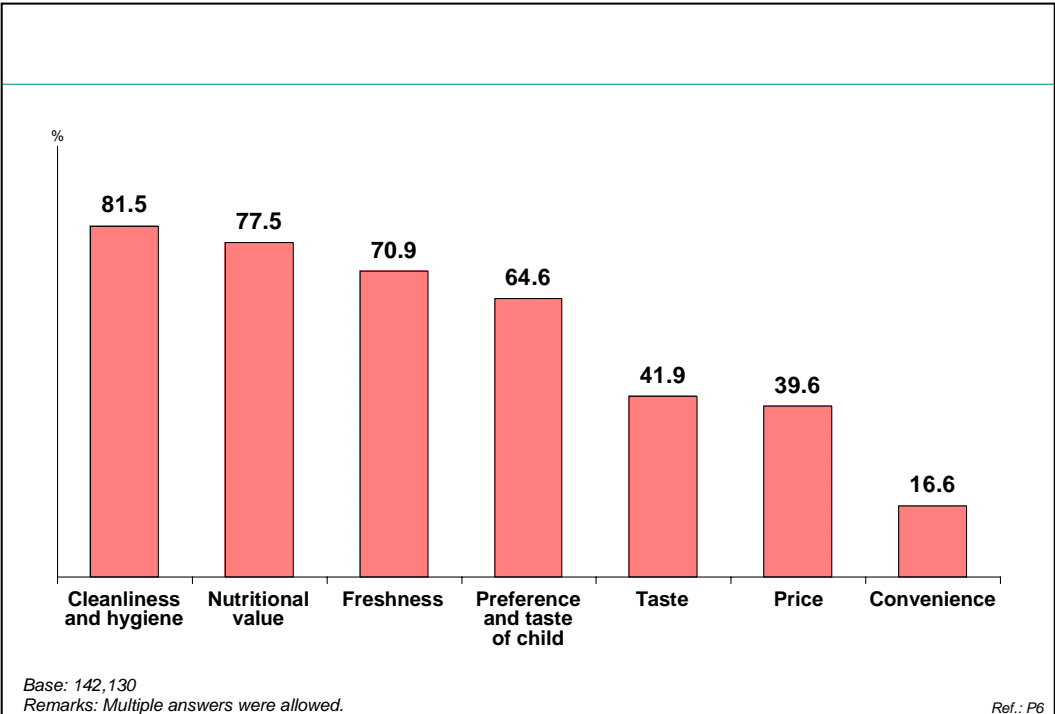


### 3.2: Findings of the Study – Parents

**Parents’  
consideration  
in choosing  
food**

Parents opined that cleanliness and hygiene (81.5%) was together the key consideration in choosing food, followed by nutritional value (77.5%), freshness (70.9%), preference and taste of the children (64.6%). Besides, taste (41.9%) and price (39.6%) also played a role in choosing food for children.

**Chart 3.2.2 Consideration in choosing food for children (P6)**

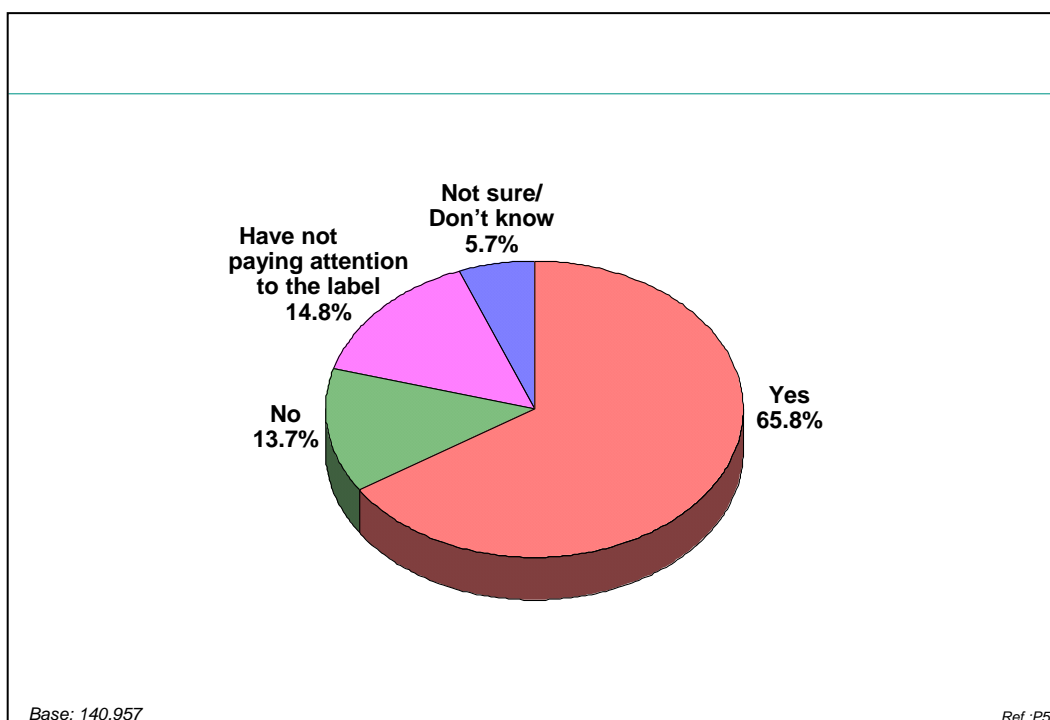


## 3.2: Findings of the Study – Parents

### Effect of labeling on food selection

Over half of the parents (65.8%) reported that labels on the food packages had an effect on food selection, contrasting to 28.5% who claimed that labelling had no effect or they did not pay attention to food labels.

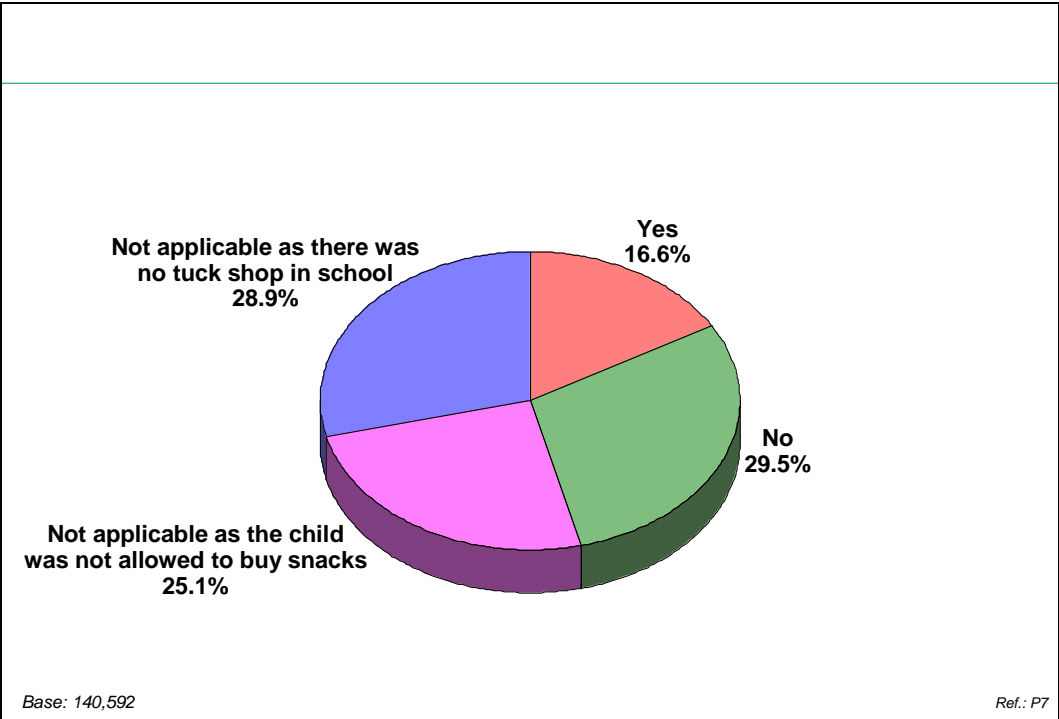
**Chart 3.2.3 Effect of labeling on food selection (P5)**



### 3.2: Findings of the Study – Parents

**Awareness of types of food and drinks bought at the school tuck shop** Among those parents who had children studying in P4 and P5, more than half (54.0%) of their children did not buy food and drinks at the school tuck shop because of the unavailability of tuck shop at school or parental disallowance of buying snacks. Another 29.5% of them were not aware of the types of food and drinks their children bought at school. Only 16.6% of the parents knew the types of food and drinks their children bought at the school tuck shop.

**Chart 3.2.4 Awareness of types of food and drinks children bought at the school tuck shop (P7)**



## 3.2: Findings of the Study – Parents

Among the parents who knew the types of food and drinks that their children bought at school tuck shop, one-third (34.3%) of their children bought grains and cereals, followed by food high in sugar (29.6%) and fried and deep-fried food (26.7%). Sandwich (20.2%) was the most common type of grains and cereals bought by their children whilst candy (27.5%) was the most common high-in-sugar food being bought. All fried and deep-fried food items their children bought were chips.

**Table 3.2.1 Types of food and drinks bought from the school tuck shop (P7)**

Type	%	Type	%
<b>Grain and cereals</b>	<b>34.3</b>	<b>Drinks with added sugar</b>	<b>14.7</b>
Sandwich	20.2	Carbonate drinks	7.6
Noodles	5.2	Lemon tea	4.1
Biscuits	5.0	Other drinks with added sugar	3.0
Bread	4.0		
		<b>Dairy products</b>	<b>14.1</b>
<b>Food high in sugar</b>	<b>29.6</b>	Soya bean milk	6.2
Candy	27.5	Egg	4.8
<b>Fried and deep-fried food</b>	<b>26.7</b>	<b>Meat, fish, eggs, peas and beans</b>	<b>14.0</b>
Chips	26.7	Dim sum	10.7
		Chicken	3.3
<b>Drinks</b>	<b>19.4</b>		
Juice	3.7	<b>Preserved food</b>	<b>7.8</b>
Drinks (unspecified)	10.6	Seaweed	6.2
<b>Processed and preserved meat</b>	<b>15.3</b>	<b>Junk Food</b>	<b>7.2</b>
Sausage	10.4	Snacks	4.9
Fish balls/ meat balls	4.9		

Base: 19,948

Remarks: Multiple answers were allowed. Only 3% or above were shown

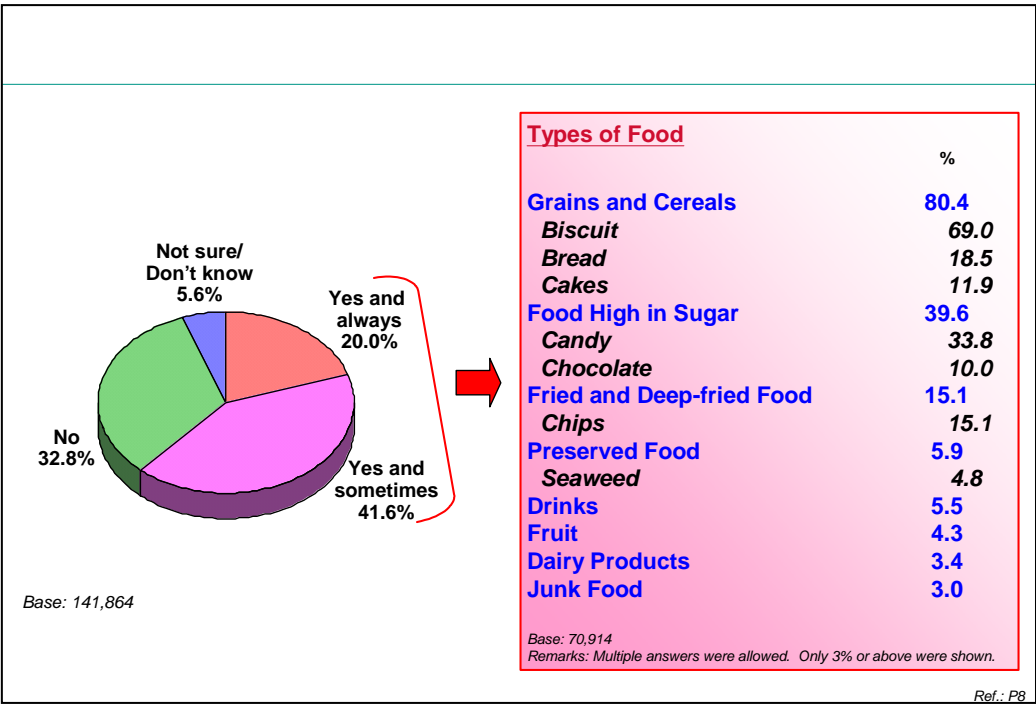
### 3.2: Findings of the Study – Parents

**Awareness of types of food and drinks that children brought to school**

On the other hand, almost two-third (61.6%) of the parents claimed that their children brought snacks to school.

Based on the information given by the parents. Among the students who brought snacks to school, the majority brought grains and cereals (80.4%) of which biscuit was the most popular type (69.0%). It was followed by food high in sugar (39.6%) such as candy, and fried and deep-fried food like chips (15.1%).

Chart 3.2.5 Children bringing snacks to school (P8)



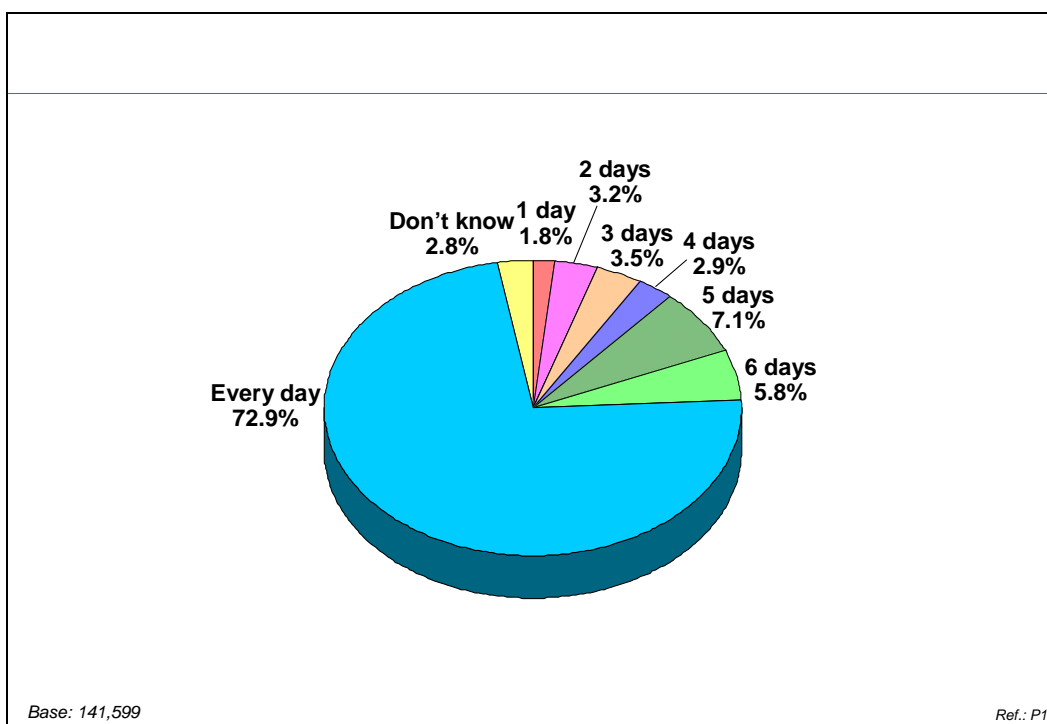


## 3.2: Findings of the Study – Parents

### Students' eating practice perceived by parents

The majority of the parents claimed that their children (72.9%) had breakfast every day.

**Chart 3.2.6 Frequency of children having breakfast in the past seven days (P1)**



## **3.2: Findings of the Study – Parents**

Parents were asked with a similar question about students' daily consumption on different types of food at home. If they said their children fulfilled the following criteria, then their children were grouped as having an appropriate frequency.

**Table 3.2.2 Definition of 'appropriate frequency' on students' eating practice perceived by parents**

P3a. Fruit	Ate at least once/day
P3b. Vegetables	Ate at least once/day
P3c. Dairy products	Ate at least once/day
P3d. Meat, fish, eggs, peas and beans	Ate at least once/day
P3e. Grains and cereals	Ate at least once/day
P3f. Fried and deep-fried food	Never
P3g. Drinks with added sugar	Never
P3h. Food high in sugar	Never
P3i. Food high in salt	Never
P3j. Food high in fat	Never

Most parents indicated that their children consumed grains and cereals (97.6% ate once or more per day), meat, fish, eggs, peas and beans (96.2%), vegetables (93.1%) and fruit (82.6%) with an appropriate frequency according to the above standard. Comparatively, less parents were aware that their children took dairy products healthily (64.8%). On the other hand, only 5.5%, 5.8% and 6.9% of the parents claimed that their children never took food high in sugar, fried and deep-fried food, drinks with added sugar respectively. Ten percent and 20.6% claimed their children never ate food high in fat and salt respectively.

## 3.2: Findings of the Study – Parents

**Table 3.2.3 Children's frequency of eating different kinds of food (P3)**

Eating freq per day in the past 7 days (%)		More than twice	Twice	Once	Less than once	Never	Don't know	Total of which classified as <i>with appropriate frequency</i>
Food Category								
A	Fruit	21.0*	15.4*	46.2*	14.4	2.3	0.7	82.6
B	Vegetables	26.4*	35.4*	31.3*	4.6	1.8	0.5	93.1
C	Dairy products	13.7*	12.6*	38.5*	26.2	7.3	1.7	64.8
D	Meat, fish, eggs, peas & beans	29.4*	38.0*	28.8*	2.9	0.3	0.6	96.2
E	Grains & cereal	54.6*	31.9*	11.1*	1.8	0.2	0.4	97.6
F	Fried & deep-fried food	6.6	7.4	23.1	55.3	5.8*	1.8	5.8
G	Drinks with added sugar	10.7	9.7	26.4	44.5	6.9*	1.8	6.9
H	Food high in sugar	11.5	10.3	29.7	41.1	5.5*	2.0	5.5
I	Food high in salt	3.3	4.1	14.9	54.0	20.6*	3.2	20.6
J	Food high in fat	5.2	5.9	18.8	57.4	10.0*	2.7	10.0

Note: \* classified as *with appropriate frequency*

Base: Food category A - 141,968; Food category B - 141,903; Food category C - 140,079;  
 Food category D - 140,170; Food category E - 139,670; Food category F - 140,154;  
 Food category G - 140,778; Food category H - 142,060; Food category I - 142,136;  
 Food category J - 142,585

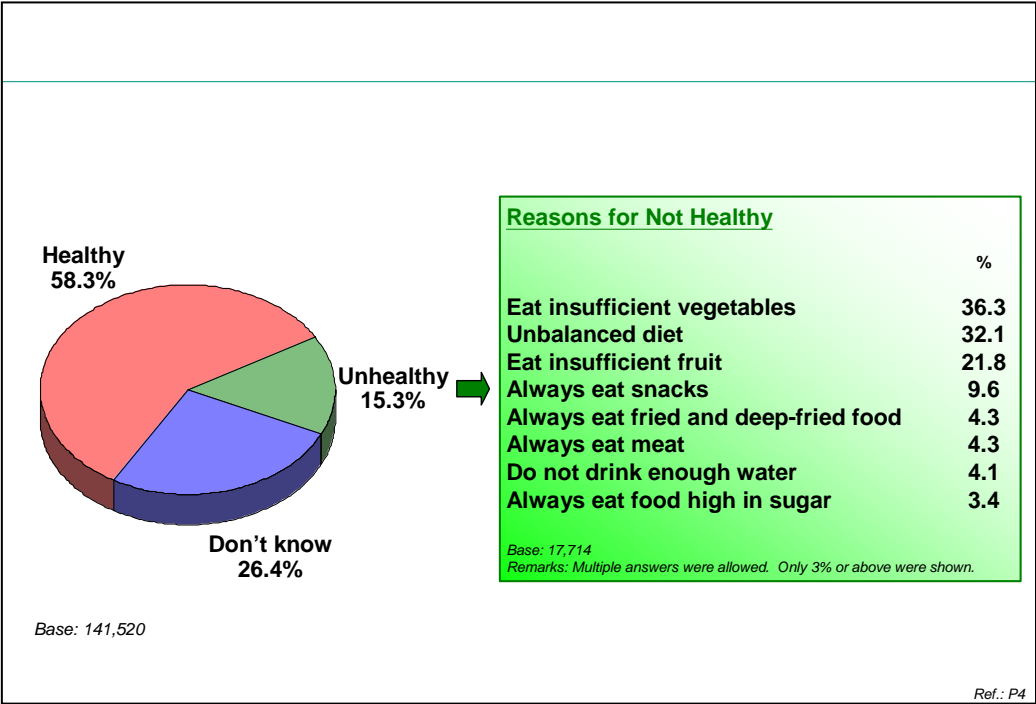
### 3.2: Findings of the Study – Parents

**Perception  
of children’s  
diet**

Over half of the parents (58.3%) considered their children’s eating habit as healthy. It is noteworthy that 26.4% of the parents did not have any idea on the healthiness of their children’s diet.

Among those parents who considered their children’s diet as unhealthy, over one-third of them claimed that their children ate insufficient vegetables (36.3%) and had an unbalanced diet (32.1%), followed by eating insufficient fruit (21.8%).

Chart 3.2.7 Perception of children’s diet (P4)

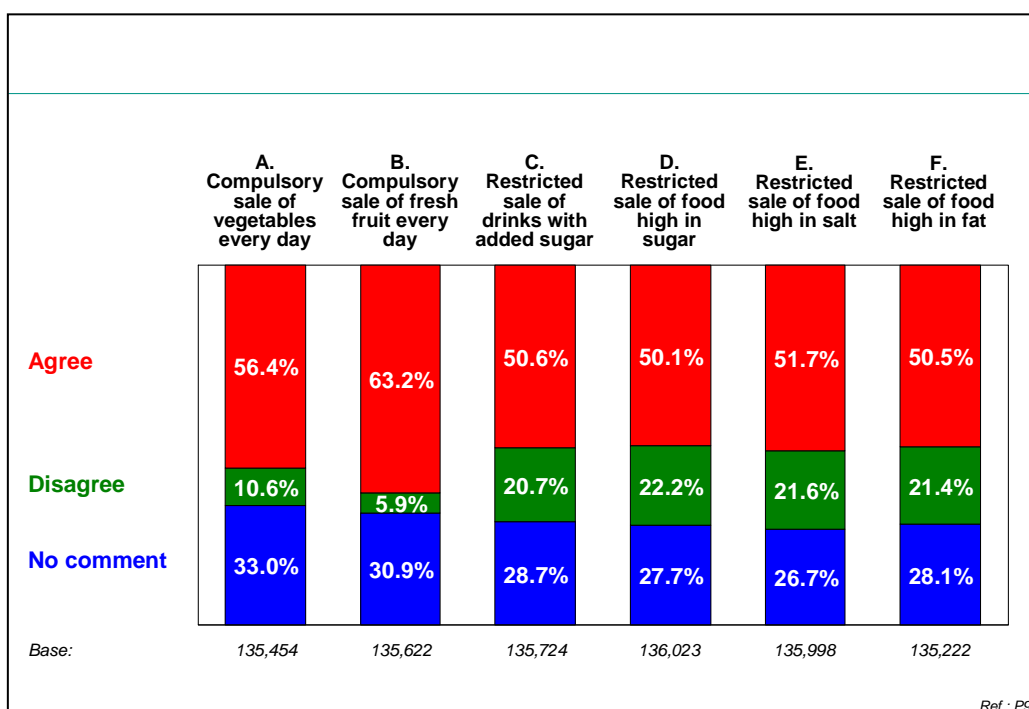


## 3.2: Findings of the Study – Parents

### Comments on food policies of school

In general, over half of the parents were positive towards stipulation of regulations for school tuck shops. 63.2% of them agreed that school tuck shops should have compulsory sale of fresh fruit every day, while 56.4% agreed to have compulsory sale of vegetables every day. For restricted sale of drinks with added sugar, and food high in sugar, salt and fat, it was supported by about half of the parents (50.6%, 50.1%, 51.7% and 50.5% respectively).

**Chart 3.2.8 Agreement with stipulating regulations for school tuck shop (P9)**



### **3.2: Findings of the Study – Parents**

The study results also showed that regulations on food variety (39.7%), such as compulsory sale of healthy food and grains and cereals, were suggested. 5.7% of the parents said there should also be regulation on food quality. It is noteworthy that 15.3% of the parents suggested that there should not be any tuck shop at school.

**Table 3.2.4 Other suggested regulations for school tuck shops (P9)**

<b>Regulation</b>	<b>%</b>
<b>Food variety</b>	<b>39.7</b>
Compulsory sale of healthy food	12.5
Compulsory sale of grains and cereals	10.3
Compulsory sale of dairy product	4.2
Compulsory sale of healthy drink	3.8
<b>Food quality</b>	<b>5.7</b>
Sale of fresh and clean food	4.5
<b>Others</b>	<b>21.1</b>
Should not have tuck shop	15.3

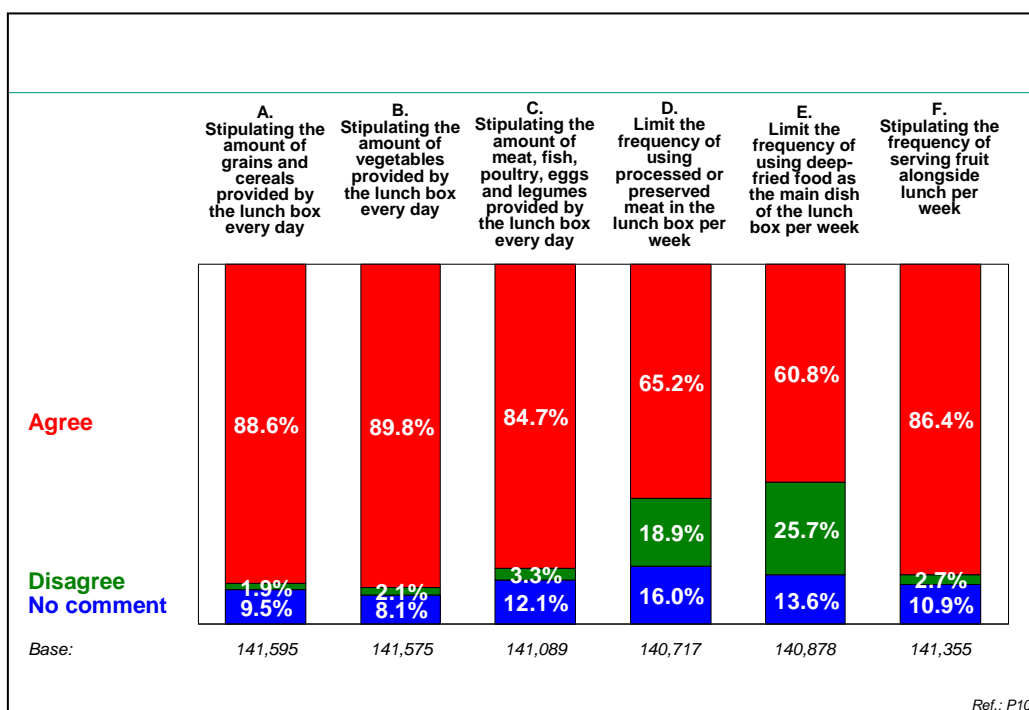
Base: 4,101

Remarks: Multiple answers were allowed. Only 3% or above were shown.

## 3.2: Findings of the Study – Parents

Similarly, most of the parents agreed to adopt some regulations for the school lunch arrangement including stipulating the amount of vegetables (89.8%), grains and cereals (88.6%) and meat, fish, poultry, eggs, and legumes (84.7%) provided with the lunch box every day and the frequency of serving fruit alongside lunch per week (86.4%). Just more than 60% agreed with limiting the frequency of using processed or preserved meat (65.2%) and deep-fried food (60.8%) as the main dish of the lunch box per week.

**Chart 3.2.9 Agreement with stipulating regulations for lunch caterers (P10)**



### 3.2: Findings of the Study – Parents

Besides, parents stated that there should be regulations on food variety (37.2%) for lunch caterers such as providing healthy drinks / food. Food quality, such as providing fresh and clean food with no MSG, was another major concern (28.7%). Six percent of the parents felt that lunch box should be in appropriate serving (i.e. the quantity of food) while another 5.2% said students should bring their own lunch to school.

**Table 3.2.5 Other suggested regulations for lunch caterers (P10)**

Regulation	%
<b>On food variety</b>	<b>37.2</b>
Provide healthy drink / food	17.4
Limit the serving of food high in fat	6.8
Limit the serving of dessert	4.1
Limit the serving of food high in salt	3.2
<b>On food quality</b>	<b>28.7</b>
Provide fresh and clean food	12.9
Use no MSG	10.0
Control food temperature	4.5
Provide delicious food	3.1
<b>On food quantity</b>	<b>6.0</b>
Lunch box should be in appropriate serving	6.0
<b>Others</b>	<b>13.7</b>
Students should bring their own lunch boxes	5.2

Base: 3,902

Remarks: Multiple answers were allowed.

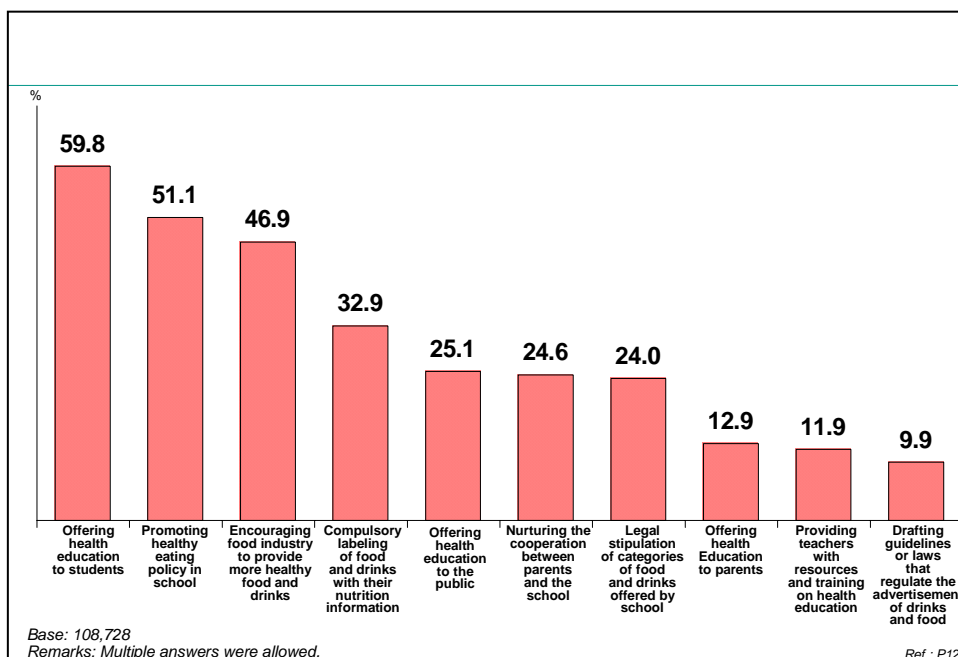


## 3.2: Findings of the Study – Parents

### Measures to promote healthy eating habits

Regarding measures to promote healthy eating habits, offering health education to students (59.8%) gained the strongest support from parents, followed closely by promoting healthy eating policy in school (51.1%) and encouraging food industry to provide more healthy food and drinks (46.9%). About one-third of the parents (32.9%) also supported compulsory labelling of food and drinks with their nutritional information. One quarter also perceived that offering health education to the public (25.1%), nurturing the co-operation between parents and school (24.6%) and legal stipulation of categories of food and drinks offered in school (24.0%) were measures that should be implemented.

**Chart 3.2.10 Measures supported by parents (P12)**



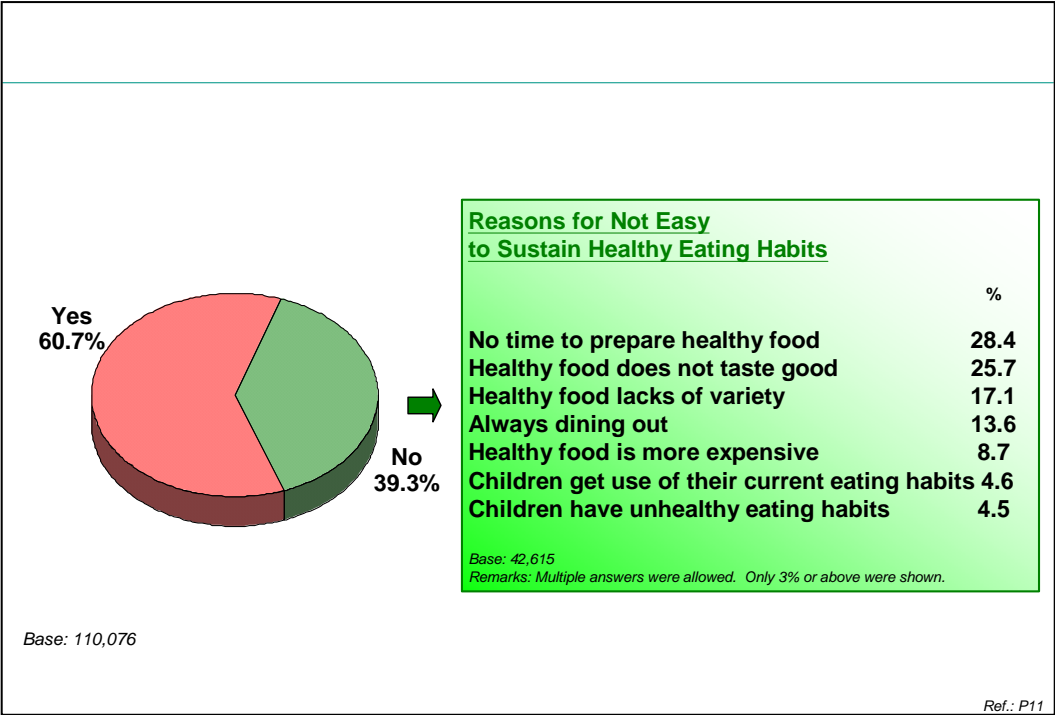
3.2: Findings of the Study – Parents

Sustaining healthy eating habits

Among those parents who had children studying in P4 and P5, 60.7% stated that healthy eating habits were easy to sustain.

Among those parents who did not agree that eating habits were easy to sustain, nearly one-third (28.4%) mentioned that having no time to prepare healthy food was the main reason, followed by healthy food did not taste good (25.7%). Healthy food lacked of variety (17.1%) and always dinning out (13.6%) were also other reasons mentioned.

Chart 3.2.11 Perception of whether healthy eating habits are easy to sustain (P11)

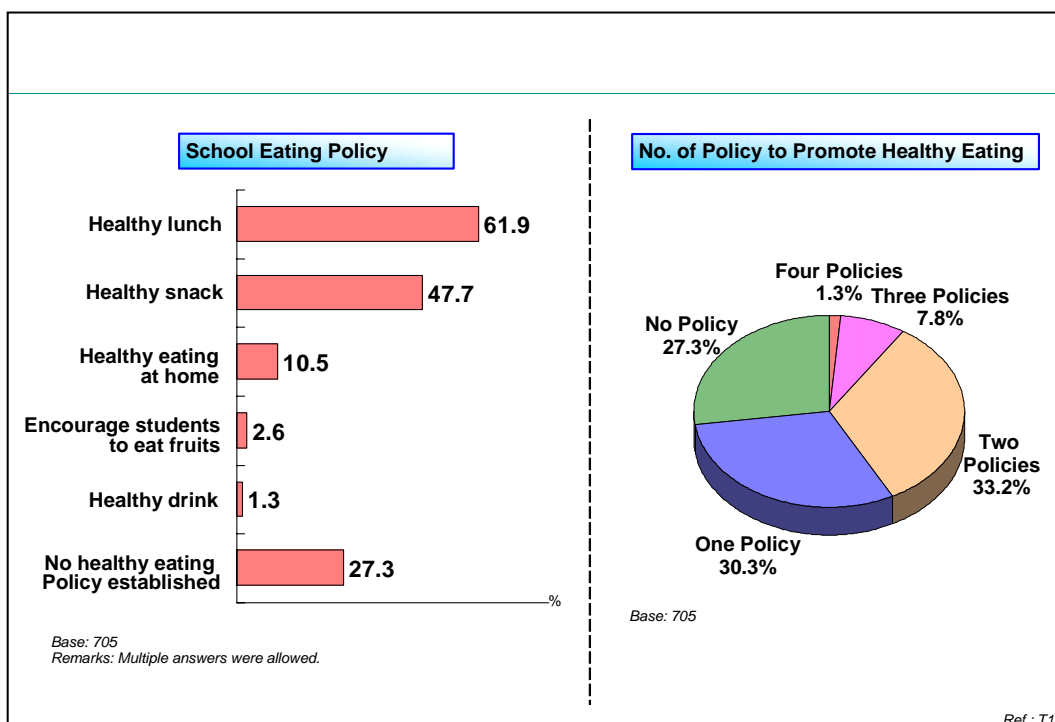


### 3.3: Findings of the Study – Schools

#### School eating policy

61.9% and 47.7% of the primary schools in Hong Kong had healthy lunch or snack policy at school respectively. It is noteworthy that 27.3% of the primary schools did not have any healthy eating policy.

**Chart 3.3.1 Policy to promote healthy eating (T1)**

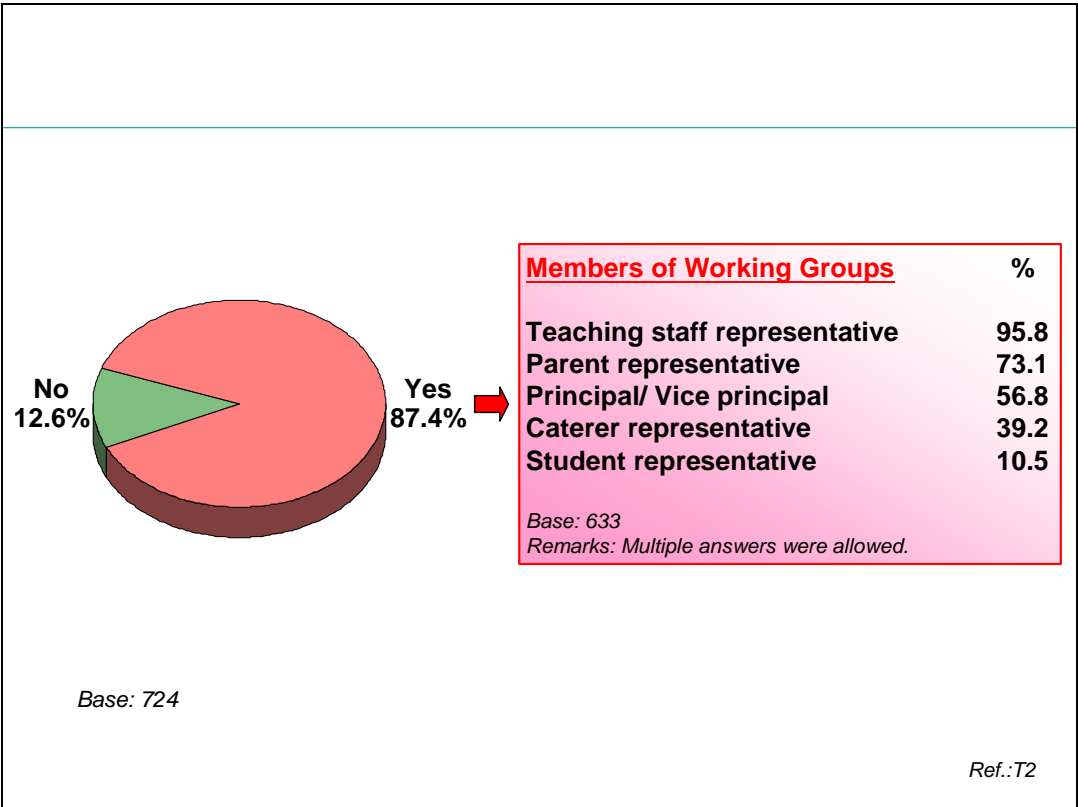


Note: There was one school giving no answer to this question

3.3: Findings of the Study – Schools

Most of the schools (87.4%) had dedicated working groups to arrange and monitor the catering service for students. Teaching staff’s representative (95.8%) was the key member in the group, followed by parents’ representative (73.1%), principal / vice principal (56.8%) and caterer’s representative (39.2%).

Chart 3.3.2 Setting up of working groups on catering service (T2)

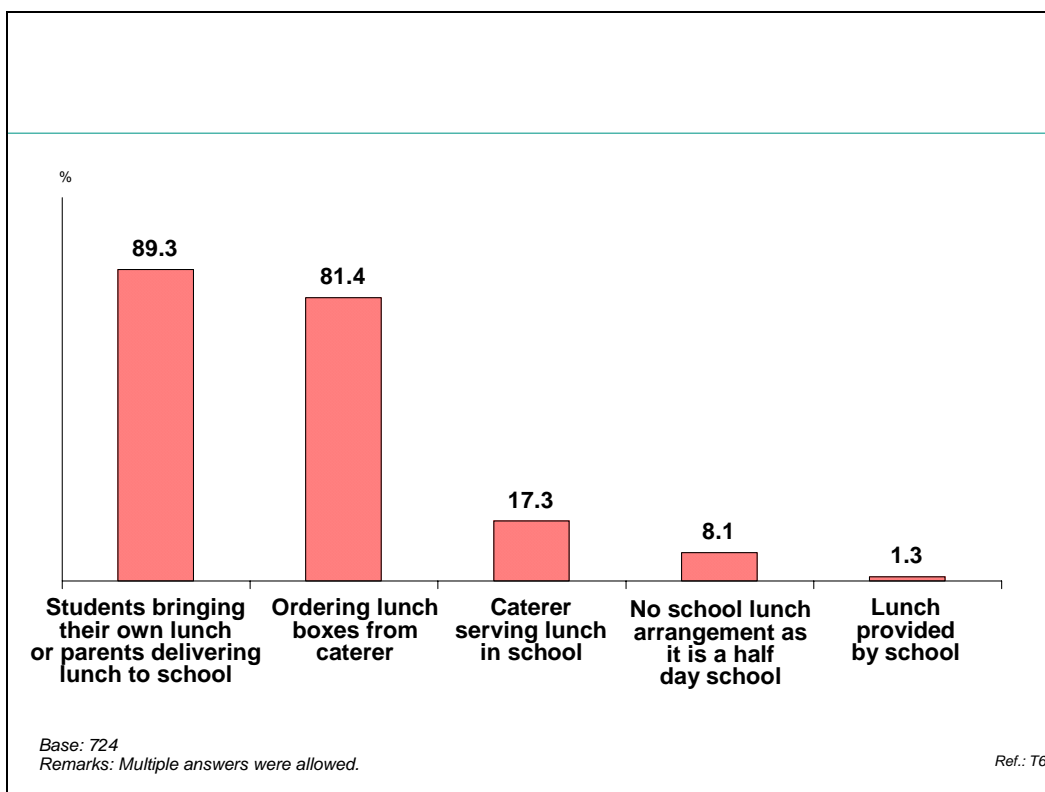


### 3.3: Findings of the Study – Schools

#### Current school lunch arrangement

Among all primary schools, most of them (89.3%) allowed students to bring their own lunch or allowed parents to deliver lunch to school. Ordering lunch boxes from caterer (81.4%) was also a popular school lunch arrangement.

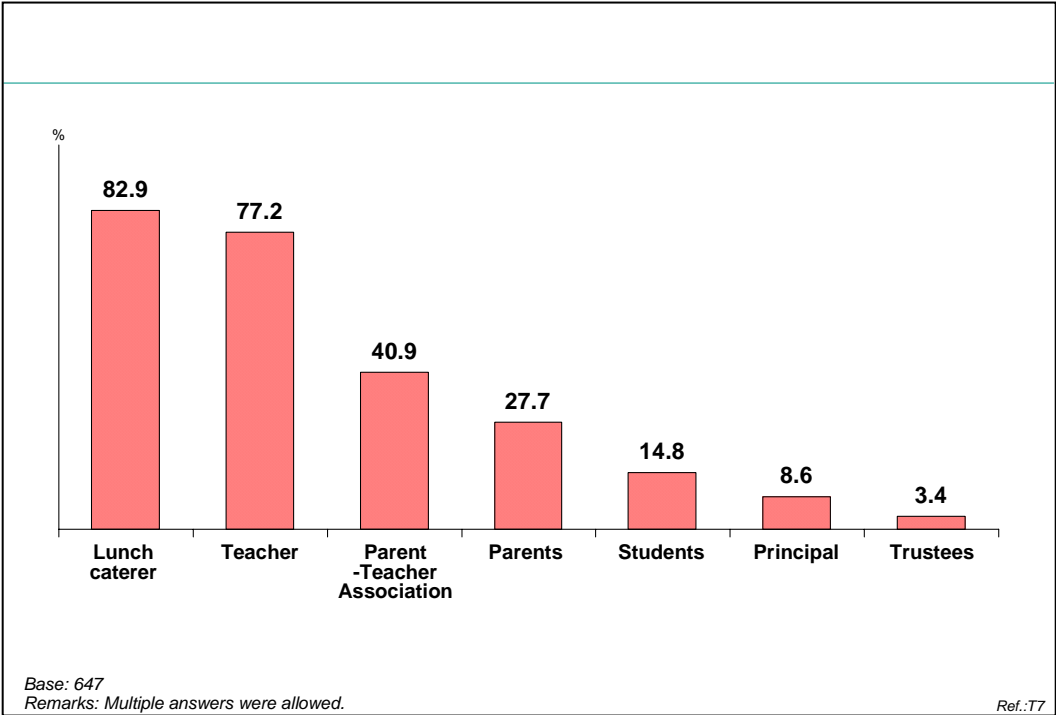
**Chart 3.3.3 School lunch arrangement (T6)**



### 3.3: Findings of the Study – Schools

It is noteworthy that lunch caterer (82.9%) and teacher (77.2%) were the major decision makers on lunch menu.

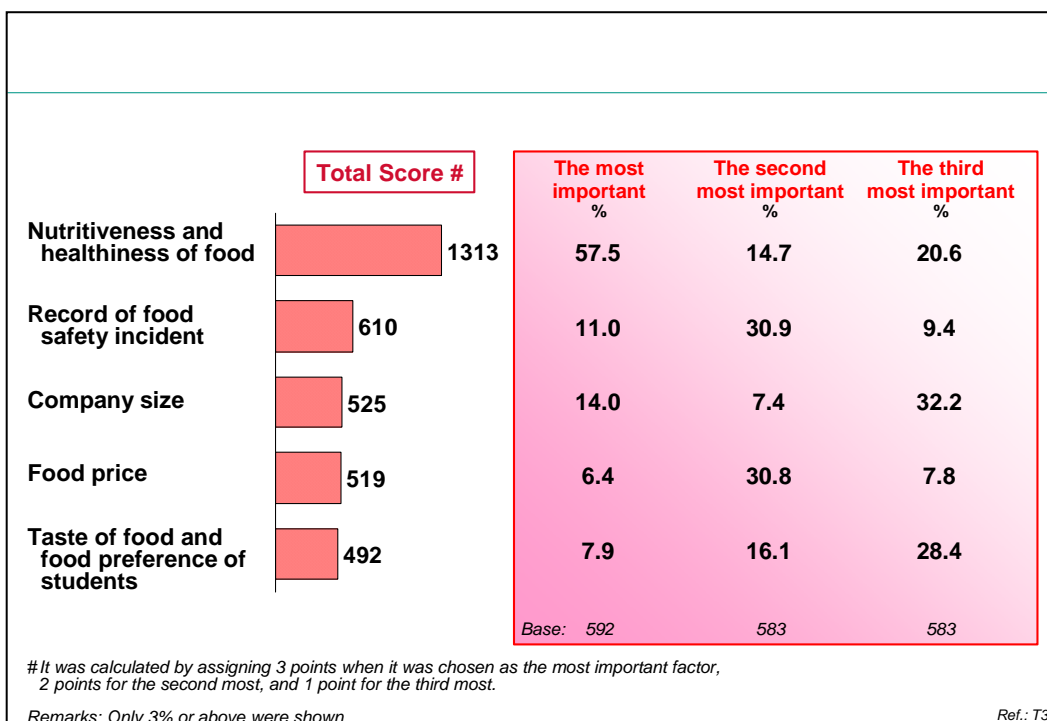
Chart 3.3.4 Decision maker on lunch menu (T7)



### 3.3: Findings of the Study – Schools

For choosing lunch caterer, nutritiveness and healthiness of food was the most important factor, with a total score of 1,313. Similar patterns were found with the importance of record of food safety incident (scored 610), company size (scored 525), food price (scored 519) and taste of food and food preference of students (scored 492).

**Chart 3.3.5 Factors affecting the choosing of lunch caterer (T3)**



## 3.3: Findings of the Study – Schools

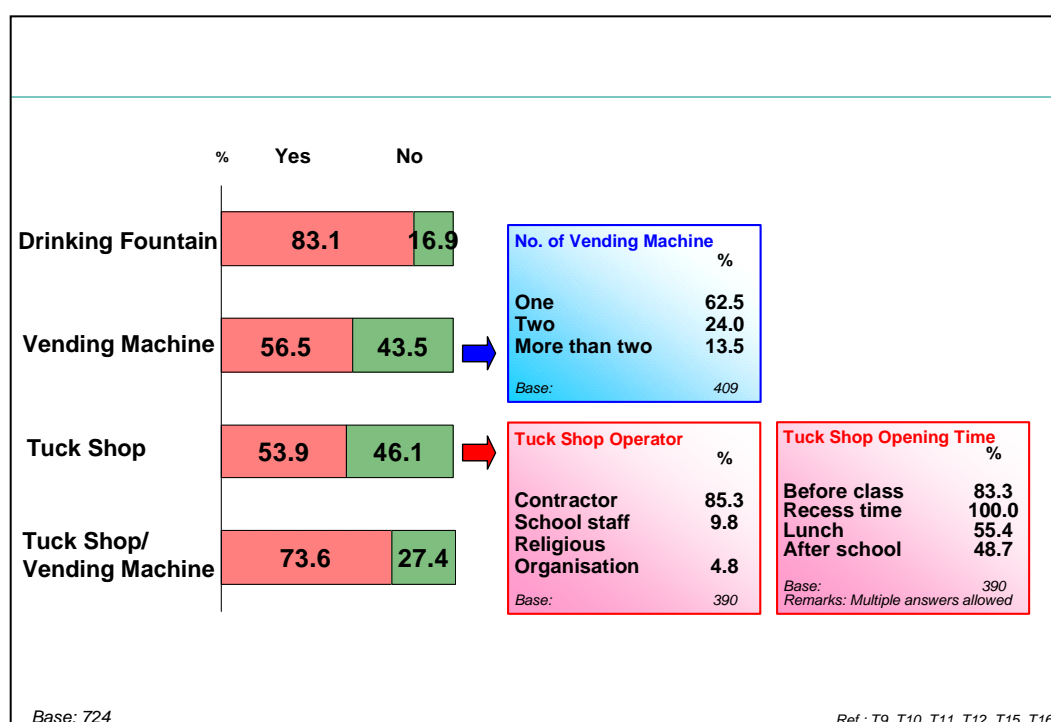
### Facilities

Most schools (83.1%) had drinking fountain facilities, while just about half had tuck shop or vending machine (53.9% and 56.5% respectively).

Among those schools with tuck shop, the contractor (85.3%) was the key operator. All tuck shops opened during recess while the majority of them (83.3%) opened before class. About half of the tuck shops ran during lunchtime (55.4%) and after school (48.7%).

Among the schools with vending machines, about two-third (62.5%) had one vending machine, whilst only 13.5% of the schools had more than two machines.

**Chart 3.3.6 School facilities for eating and drinking (T9-12, T15-16)**

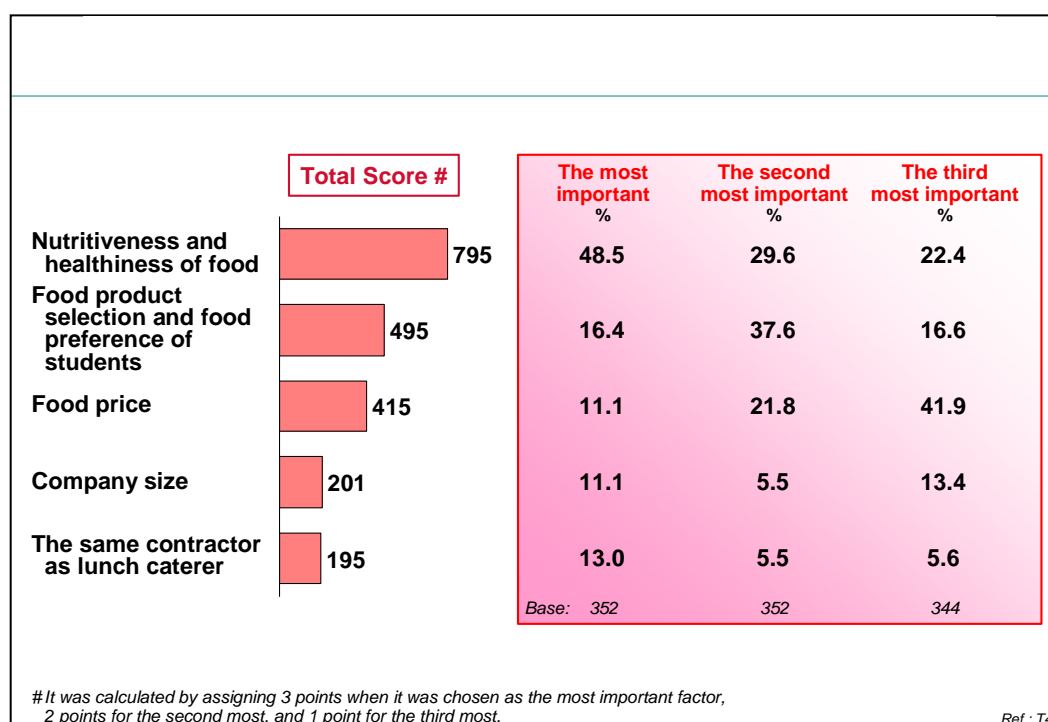




### 3.3: Findings of the Study – Schools

For choosing tuck shop operator, a score of importance was also calculated. Nutritiveness and healthiness of food was also the most important factor affecting the choosing of tuck shop contractor (scored 795). Food product selection and food preference of students (scored 495) was the second most important factor.

**Chart 3.3.7 Factors affecting the choosing of tuck shop contractor (T4)**

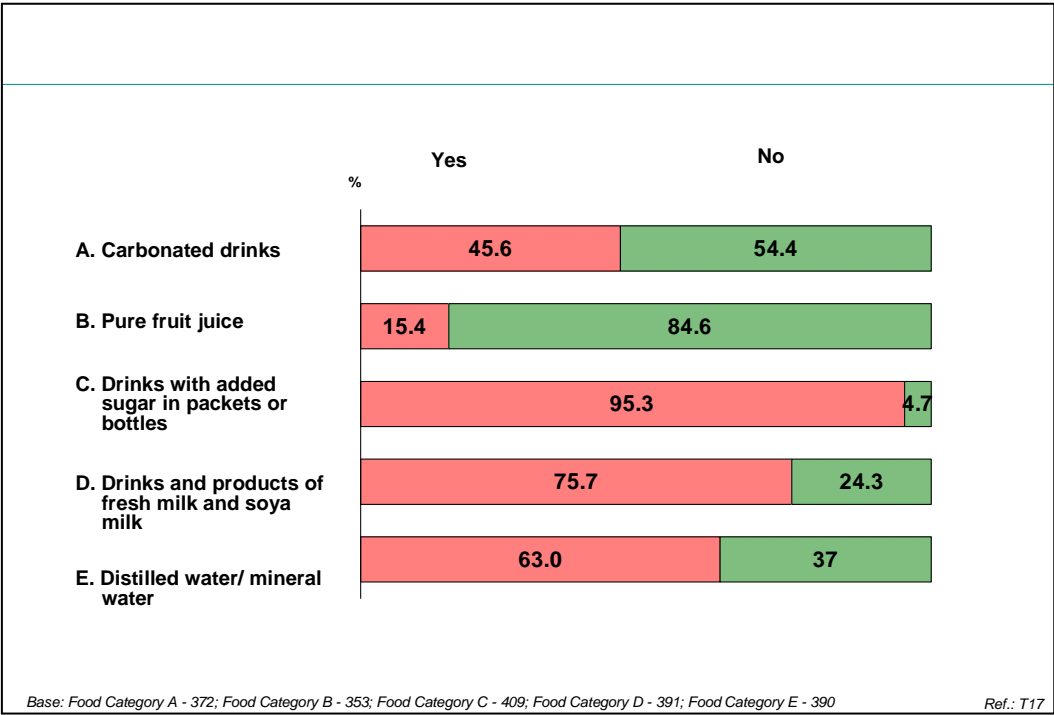


### 3.3: Findings of the Study – Schools

It was found that only drinks were provided by the vending machines in school. No food were available.

Most of the vending machines in school provided drinks with added sugar in packets or bottles (95.3%), fresh milk and soya milk (75.7%) and distilled water / mineral water (63.0%). About half of the machines also provided carbonated drinks (45.6%).

Chart 3.3.8 Food and drinks provided by the vending machines in school (T17)

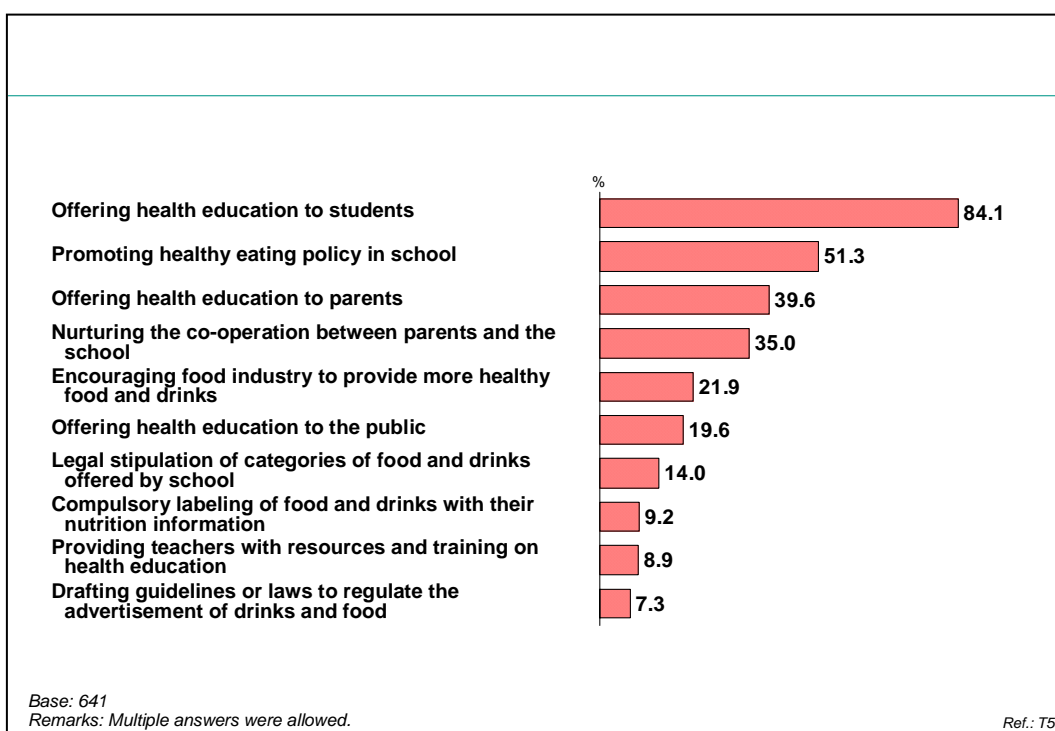


### 3.3: Findings of the Study – Schools

#### Measure to promote healthy eating habits

As for promoting healthy eating habits among primary schools, offering health education to students (84.1%) was the measure mostly supported by primary schools, followed by promoting healthy eating policy in school (51.3%). Offering health education to parents (39.6%) and nurturing co-operation between parents and school (35.0%) were also supported by some schools.

**Chart 3.3.9 Measures supported by schools (T5)**

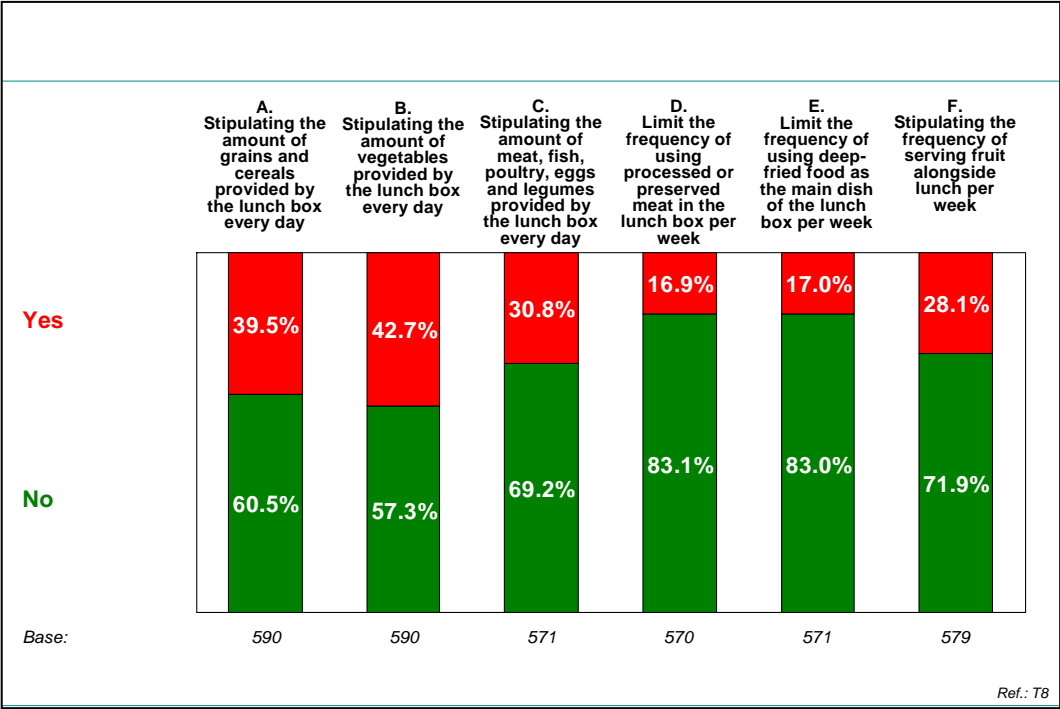


3.3: Findings of the Study – Schools

Food regulations stipulated by the schools

In general, more than half of the schools did not stipulate regulations for lunch caterers. Only 16.9% to 42.7% of the schools stipulated regulations on different types of food. Comparatively, the proportion of schools with stipulation on the amount of vegetables was the highest (42.7%). 39.5% had stipulation on the amount of grains and cereals, followed by stipulation on the amount of meat, fish, poultry, eggs and legumes (30.8%) and the frequency of serving fruit (28.1%). On the other hand, most of the schools did not limit the frequency of using processed or preserved meat (83.1%) and deep-fried food (83.0%) in the lunch box.

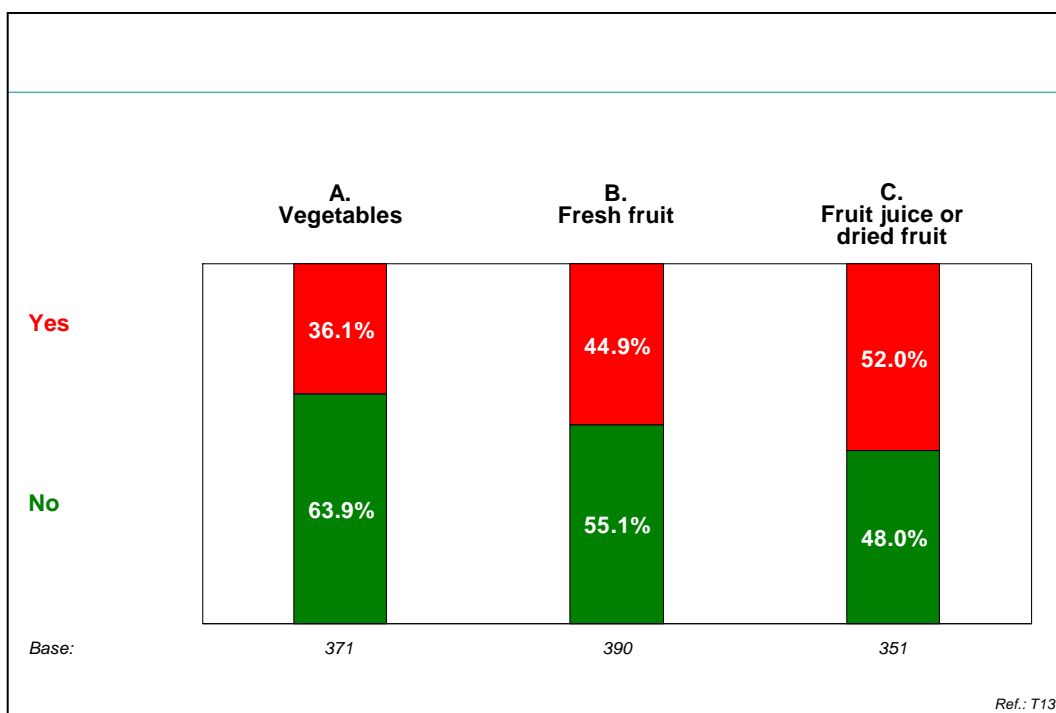
Chart 3.3.10 Regulations stipulated for lunch caterers (T8)



### 3.3: Findings of the Study – Schools

For those schools with tuck shops, only about half requested tuck shops to sell fruit juice or dried fruit (52.0%). The proportion of schools requested the selling of fresh fruit (44.9%) and vegetables (36.1%) was lower.

**Chart 3.3.11 Request for the selling of healthy food at tuck shop (T13)**

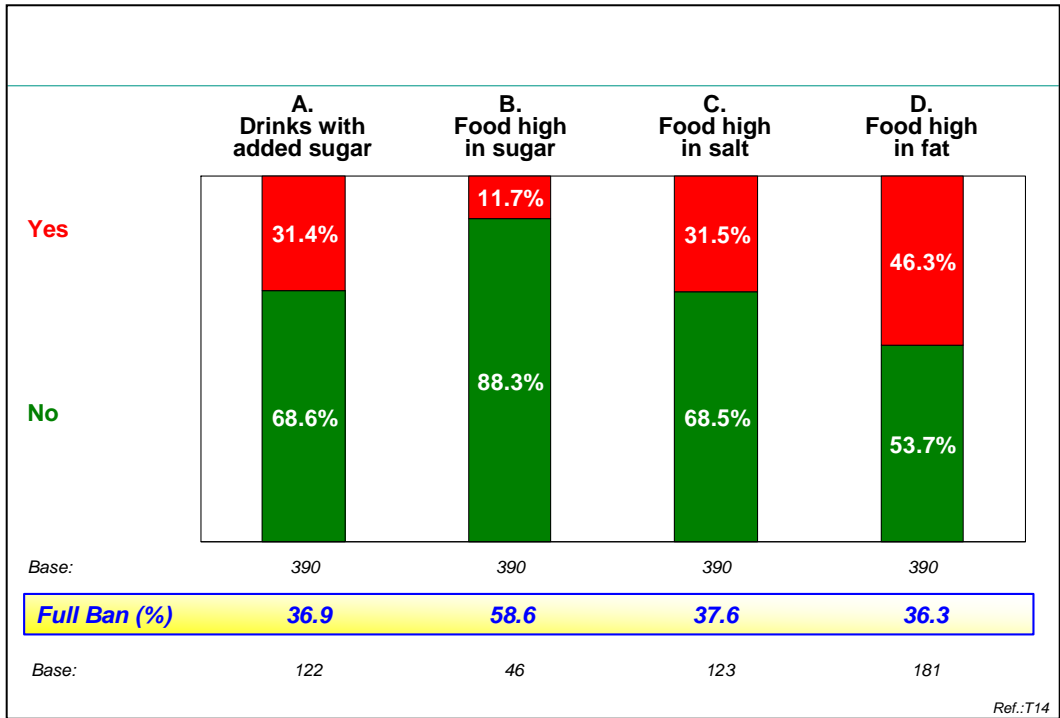


### 3.3: Findings of the Study – Schools

Besides, not many schools imposed restriction on selling unhealthy food at tuck shops. Just less than half of the schools restricted tuck shops from selling food high in fat (46.3%). About three-tenth restricted the selling of drinks with added sugar and food high in salt (31.4% and 31.5% respectively). The rate of restricting the selling of food high in sugar at tuck shops was particularly low (11.7%).

Among those schools which imposed restriction on selling food high in sugar at tuck shops, only 58.6% of them requested a full ban.

Chart 3.3.12 Restriction on selling unhealthy food at tuck shops (T14)

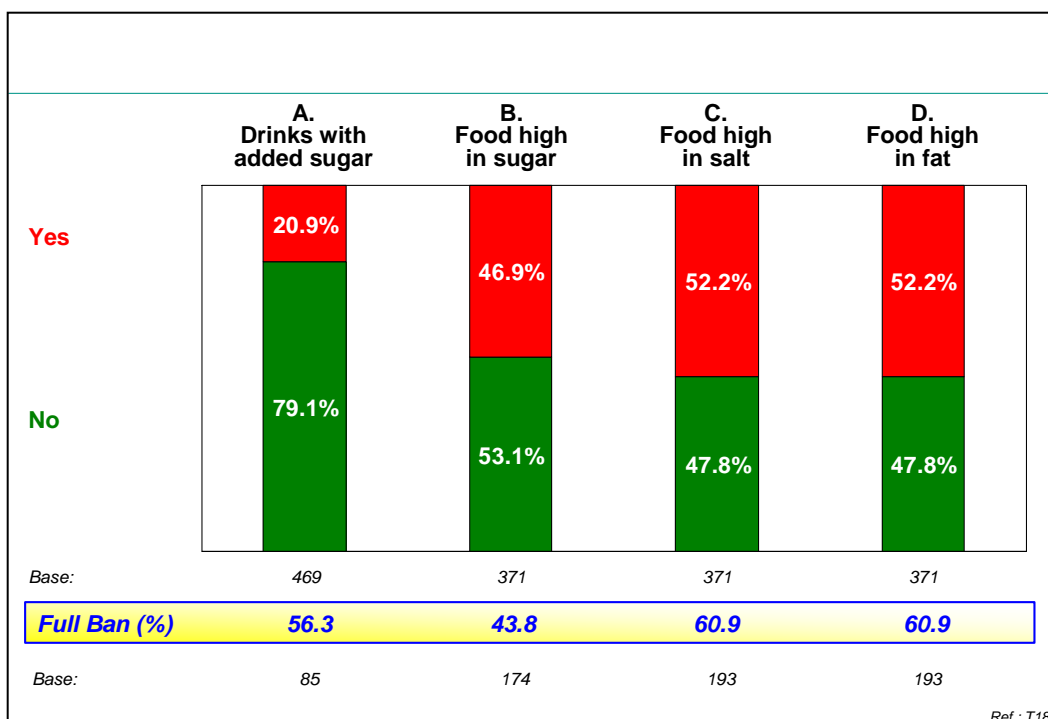


### 3.3: Findings of the Study – Schools

Comparatively, there were more schools having restrictions on selling unhealthy drinks or food for the vending machines than the tuck shops. About half of the schools imposed restrictions on selling food high in sugar (46.9%), salt (52.2%) or fat (52.2%). However, there were fewer schools restricting the selling of drinks with added sugar (20.9%).

Among those schools imposing restriction on selling drinks with added sugar at the vending machines, only 56.3% of them requested a full ban.

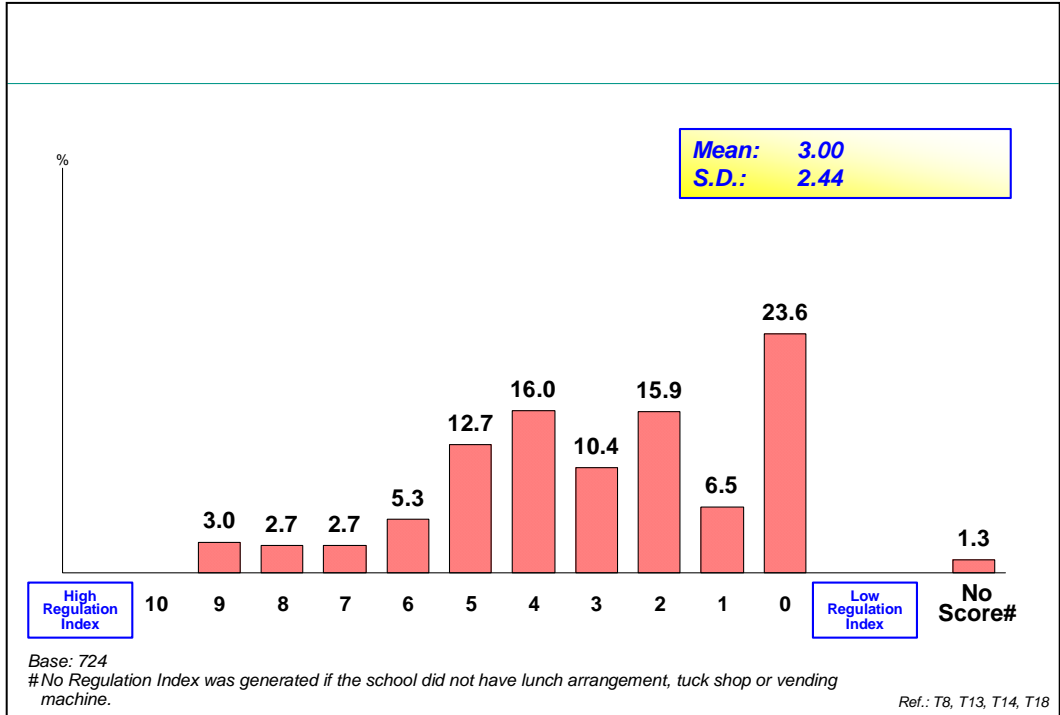
**Chart 3.3.13 Restriction on selling unhealthy food in vending machines (T18)**



### 3.3: Findings of the Study – Schools

Based on the information of food regulation by schools, a RI was generated. The majority (85.1%) of the schools attained a score of 5 or below. In general, a low mean score (3.00 out of a maximum of 10) was noted.

Chart 3.3.14 Regulation Index of school (T8, 13, 14, 18)





### 3.4: Findings of the Study – Summary

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The results showed that there was a gap between knowledge and practice. Although most of the students could choose the healthier food from the food groups and had knowledge of Food Guide Pyramid (the mean of KI was 8.12 out of 10), their Attitude Index and Practice Index of eating habits were relatively low (the mean of AI was 2.57 out of 6 and mean of PI was 5.3 out of 11).

The outcomes of students' self-reported eating habits were not ideal. When eating habits were investigated, very few students claimed they had never taken unhealthy drinks and food in the past seven days (8.7% to 24.7%). However, the majority of the students consumed meat, fish, eggs, peas and beans, grains and cereals, dairy products and vegetables with an appropriate frequency (70.7% to 93.0%). Just more than half of the students (56.7%) met the standard of appropriate frequency in eating fruit, which was not a very satisfactory finding; yet the figures were higher than that of a similar study<sup>3</sup>, where there were only 20.1% and 27.9% of students took fruit and vegetables more than twice a day.

The majority of the students perceived that their eating habit was healthy (89.3%). Most of them regarded their eating habit as very healthy (13.8%), healthy (35.5%) or acceptable (40.1%), whereas just less than half of them (42.4%) attained satisfactory PI of 6 points out of 11 or above. Such findings were similar to that of a previous study<sup>4</sup>, where over 90% of the students considered their dietary habit healthy, although half of them consumed fried or high fat food at least once per day.

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### **3.4: Findings of the Study – Summary**

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Both students and parents mentioned that cleanliness and hygiene was the key consideration when choosing food. However, students also concerned about taste; while parents also paid attention to the nutritional value.

Although students' eating habits reported by themselves and their parents were similar. More parents (15.3%) considered their children's eating habits as unhealthy, comparing with the percentage of students perceiving their own eating habits as unhealthy (3.6%).

The study results also showed that parents were lack of awareness of their children's eating habits at school. Only four in every 10 parents knew what kind of food and drinks their children bought at school tuck shops. About two-fifth (38.4%) of the parents did not know whether their children brought snacks to school. Among those parents who said their children brought snacks to schools, the most common items brought were biscuit, candy and bread.

Besides, 39.3% of the parents felt healthy eating habits were not easy to sustain. Their reasons were mainly as having no time to prepare healthy food (28.4%), healthy food did not taste good (25.7%) and healthy food lacked of variety (17.1%).

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### 3.4: Findings of the Study – Summary

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Data collected from the school representatives showed that, nearly 30% of schools did not adopt any healthy eating policy. Most of the schools (87.4%) had formed dedicated working groups to arrange and monitor the catering service for students, mostly with teaching staff's representative (95.8%) and parents' representative (73.1%) as the key members of the group. Involvement rate of parents in the working groups was 73.1% in this study, it has significantly increased compared with the study conducted in 1996 which found no parental involvement in the working group.<sup>5</sup> Nevertheless, lunch caterers were found to be the decision makers on menu in most schools (82.9%).

Nutritiveness and healthiness of food was the most important factor for schools to choose lunch caterers in this study, contrasting with company size as the most important consideration (39.0%) in the above-mentioned study which was conducted in 1996.<sup>5</sup>

To promote healthy eating habits, both parents and schools indicated that offering health education to students and promoting healthy eating policy in school were the most effective measures. Apart from these two measures, parents also supported encouraging the food industry to provide more healthy food and drinks, and compulsory showing of nutritional information along the food label; while many school representatives supported offering health education to parents and strengthening co-operation between schools and parents.

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### **3.4: Findings of the Study – Summary**

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Regarding eating regulations stipulated in schools, the Regulation Index attained was generally low – low RI only reflected that schools had few healthy eating regulations set. In contrast, there was a strong demand from parents for more stipulations on the amount of major food groups, including fruit and vegetables, to be provided in lunch and compulsory sale of fruit and vegetables in tuck shop. Comparatively, there were more stipulations related to vegetables, fruit, and food high in salt and fat. Concerning drinks and food high in sugar which were available in most vending machines and school tuck shops, the regulations on them were obviously inadequate.

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## Chapter 4: Cross Tabulations and Subgroup Analysis – Introduction

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This chapter summarises the various cross tabulations and subgroup analyses used. The structure of this chapter is as follows:

- Section 4.1 presents the cross tabulations and subgroup analysis of students' knowledge of healthy food;
- Section 4.2 presents the cross tabulations and subgroup analysis of students' attitude towards eating preference;
- Section 4.3 presents the cross tabulations and subgroup analysis of students' eating practice; and
- Section 4.4 presents the cross tabulations and subgroup analysis of perception of students' healthiness.

In general, students' knowledge of healthy food, attitude towards eating preference and eating practice were tested against:

- Gender
- Decision maker on food at home
- Mode of school
- Students' perceived healthiness of their own diet
- Practice Index (PI)
- Attitude Index (AI)
- Knowledge Index (KI)
- Regulation Index (RI)

As mentioned in Chapter 2, the unweighted data was used when performing the appropriate statistical tests.

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## 4.1: Cross Tabulations and Subgroup Analysis – Students’ Knowledge of Healthy Food

### Knowledge Index (KI)

KI reflected students’ knowledge of healthy eating. It was a composite index of students’ concept on healthy food choice and Food Guide Pyramid.

A subgroup analysis showed that the mean of KI of female students was significantly higher than that of male students (8.42 vs. 7.91, with  $p < 0.0001$ ). A larger proportion of female students (58.7%) gained a full score in KI than that of male students (50.3%)

**Table 4.1.1 Knowledge Index by gender**

<b>Gender</b> <b>Knowledge Index</b>	<b>Male (%)</b>	<b>Female (%)</b>	<b>Total (%)</b>
0	7.1	5.4	6.3
1	0.6	0.4	0.5
2	1.1	0.5	0.8
3	1.5	0.8	1.2
4	2.7	1.5	2.1
5	4.6	3.7	4.2
6	5.1	4.0	4.6
7	7.5	6.4	7.0
8	11.1	10.0	10.6
9	8.2	8.6	8.4
10	50.3	58.7	54.4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>7.91</b>	<b>8.42</b>	<b>8.15</b>
<b>S.D.</b>	<b>2.97</b>	<b>2.66</b>	<b>2.84</b>
<b>95% C.I.</b>	<b>7.83 – 7.99</b>	<b>8.34 – 8.50</b>	<b>8.09 – 8.21</b>

*Mann-Whitney test was used.  
 $p < 0.0001$*

## 4.1: Cross Tabulations and Subgroup Analysis – Students’ Knowledge of Healthy Food

When KI was tested against RI, Spearman’s Correlation was used. The correlation between them was not significant with correlation coefficient -0.018 ( $p = 0.085$ )

Both indices were categorised for cross tabulation, no association was found between them ( $p = 0.091$ ).

**Table 4.1.2 Knowledge Index (category) by Regulation Index (category)**

<div>RI (category)</div> <div>KI (category)</div>	0 (%)	1-2 (%)	3-4 (%)	5-6 (%)	7-10 (%)	Total (%)
0-5	14.4	16.1	15.2	15.1	16.2	15.1
6-7	11.8	11.1	11.6	13.2	10.4	11.6
8-9	18.7	17.4	19.4	19.7	23.0	19.0
10	55.1	55.5	53.7	52.0	50.3	54.4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.*

*$p = 0.091$*

*Note: Students without RI were excluded in the subgroup analysis.*

## 4.2: Cross Tabulations and Subgroup Analysis – Students’ Attitude towards Eating Preference

### Attitude Index (AI)

AI represented the healthiness of students’ food preferences.

Female students were found having an AI significantly higher than that of male students ( $p < 0.0001$ ). The mean AI of female students was 2.83 while it was only 2.39 for male students.

**Table 4.2.1 Attitude Index by gender**

<b>Gender</b> <b>Attitude Index</b>	<b>Male (%)</b>	<b>Female (%)</b>	<b>Total (%)</b>
0	22.4	14.6	18.7
1	17.7	14.8	16.3
2	16.1	16.9	16.5
3	13.3	16.1	14.6
4	12.6	13.8	13.2
5	8.6	11.4	10.0
6	9.2	12.4	10.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>2.39</b>	<b>2.83</b>	<b>2.60</b>
<b>S.D.</b>	<b>1.95</b>	<b>1.94</b>	<b>1.96</b>
<b>95% C.I.</b>	<b>2.34 – 2.44</b>	<b>2.77 – 2.89</b>	<b>2.56 – 2.64</b>

*Mann-Whitney test was used.  
 $p < 0.0001$*



## 4.2: Cross Tabulations and Subgroup Analysis – Students’ Attitude towards Eating Preference

When AI was tested against KI, Spearman’s Correlation was used. The correlation between them was significant and correlated in a positive direction with correlation coefficient 0.464 ( $p < 0.0001$ ).

Both indices were categorised for cross tabulation. Significant association between them was found ( $p < 0.0001$ ). Those with low AI were found with low KI as well. AI increased when KI increased.

**Table 4.2.2 Attitude Index (category) by Knowledge Index (category)**

AI (category) \ KI (category)	0-5 (%)	6-7 (%)	8-9 (%)	10 (%)	Total (%)
0	61.1	23.0	14.1	7.6	18.7
1-2	29.5	47.1	38.6	28.6	32.8
3-4	6.6	23.0	31.2	33.6	27.8
5-6	2.8	6.9	16.1	30.2	20.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.  
 $p < 0.0001$*

## 4.2: Cross Tabulations and Subgroup Analysis – Students’ Attitude towards Eating Preference

When comparing between students who perceived their diet as healthy and their counterparts, a significantly lower mean of AI was observed among the latter group (2.84 vs. 1.84, with  $p < 0.0001$ ).

**Table 4.2.3 Attitude Index by students’ perceived healthiness of their own diet**

Attitude Index	Healthy (%)	Unhealthy (%)	Total (%)
0	13.0	27.2	18.7
1	16.3	22.3	16.3
2	17.3	21.0	16.5
3	15.8	12.0	14.6
4	14.4	8.4	13.2
5	11.2	4.2	10.0
6	12.1	4.9	10.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>2.84</b>	<b>1.84</b>	<b>2.60</b>
<b>S.D.</b>	<b>1.91</b>	<b>1.71</b>	<b>1.96</b>
<b>95% CI</b>	<b>2.80 – 2.88</b>	<b>1.65 – 2.03</b>	<b>2.56 – 2.64</b>

*Mann-Whitney test was used.*

*$p < 0.0001$*

*Note: Students who did not have any perception of their own diet were excluded in the subgroup analysis.*

## 4.2: Cross Tabulations and Subgroup Analysis – Students’ Attitude towards Eating Preference

Spearman’s Correlation was used to test between AI and RI. A significant and negative correlation was found with correlation coefficient -0.057 ( $p < 0.001$ ).

Both indices were categorised for cross tabulation. Although there was a significant association between the two indices, no special pattern was observed.

**Table 4.2.4 Attitude Index (category) by Regulation Index (category)**

RI (category) AI (category)	0 (%)	1-2 (%)	3-4 (%)	5-6 (%)	>6 (%)	Total (%)
0	18.5	17.6	18.4	20.1	24.8	18.7
1-2	30.7	34.1	31.5	35.0	38.5	32.8
3-4	29.1	27.2	27.2	28.9	23.4	27.8
5-6	21.7	21.2	22.9	15.9	13.2	20.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.*

*$p < 0.0001$*

*Note: Students without RI were excluded in the subgroup analysis.*

### **4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice**

#### **Practice of eating breakfast**

It was found that a significantly larger proportion of female students (89.0%) had breakfast on the survey day, compared with the percentage of male students who had breakfast (83.5%), with  $p < 0.0001$ .

**Table 4.3.1 Students’ practice of eating breakfast on the survey day by gender**

<b>Had breakfast or not</b>	<b>Male (%)</b>	<b>Female (%)</b>	<b>Total (%)</b>
Yes	83.5	89.0	86.2
No	16.5	11.0	13.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.  
 $p < 0.0001$*

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

The results also showed that a significantly larger proportion of students whose parents or domestic helpers were the decision makers on food at home would eat breakfast, compared with those who made decision on food on their own (87.6% and 87.5% vs. 79.4%), with  $p < 0.0001$ .

**Table 4.3.2 Students’ practice of eating breakfast by decision maker on food**

Had breakfast or not	Parents (%)	Domestic helpers (%)	Self (Students) (%)	Total (%)
Yes	87.6	87.5	79.4	86.2
No	12.4	12.5	20.6	13.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.*

*$p < 0.0001$*

*Note: Students with other decision maker on food were excluded in the subgroup analysis.*

### **4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice**

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The habit of eating breakfast also varied among students studying in different modes of school. Possibly affected by school hours, a significantly larger proportion of whole-day school students (86.8%) ate breakfast, compared with half-day school students (70.7%), with  $p < 0.0001$ .

**Table 4.3.3    Students’ practice of eating breakfast by mode of school**

<b>Had breakfast or not</b>	<b>Half-day school (%)</b>	<b>Whole-day school (%)</b>	<b>Total (%)</b>
Yes	70.7	86.8	86.2
No	29.3	13.2	13.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.*

*$p < 0.0001$*

*Note: All half-day schools took part in this study were afternoon (PM) schools.*

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### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

For those students who perceived their diet as healthy, a significantly smaller proportion of them skipped breakfast (12.3%), compared with those who perceived themselves as with unhealthy diet (29.6%), with  $p < 0.0001$ .

**Table 4.3.4 Students’ practice of eating breakfast by students’ perceived healthiness of their own diet**

Eat breakfast or not	Healthy (%)	Unhealthy (%)	Total (%)
Yes	87.7	70.4	86.2
No	12.3	29.6	13.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.*

*$p < 0.0001$*

*Note: Students who did not have any perception of their own diet were excluded in the subgroup analysis.*

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

#### Score on eating practice

Score on eating practice was obtained by accounting the eating frequencies in 10 different types of food reported by students.

The mean score on eating practice among male students (4.41) was significantly lower than that of female students (4.59) with  $p < 0.0001$ .

**Table 4.3.5 Score on eating practice by gender**

Score on eating practice	Male (%)	Female (%)	Total (%)
0	0.5	0.2	0.4
1	2.3	1.6	2.0
2	8.7	5.6	7.2
3	16.7	14.6	15.7
4	24.3	25.7	25.0
5	28.2	32.7	30.4
6	9.3	9.3	9.3
7	4.7	5.0	4.9
8	3.0	3.3	3.1
9	1.5	1.6	1.5
10	0.7	0.5	0.6
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>4.41</b>	<b>4.59</b>	<b>4.50</b>
<b>S.D.</b>	<b>1.68</b>	<b>1.57</b>	<b>1.63</b>
<b>95% C.I.</b>	<b>4.37 – 4.46</b>	<b>4.54 – 4.64</b>	<b>4.46 – 4.53</b>

*T-test was used.*

*$p < 0.0001$*

*Note: Students with no score were excluded in the subgroup analysis.*



### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

Students who chose food by themselves had a significantly lower mean score on eating practice (4.22), compared with those whose parents and domestic helpers were decision makers on food (4.54 and 4.49 respectively), with  $p < 0.0001$ .

**Table 4.3.6 Score on eating practice by decision maker on food**

Score on eating practice	Parents (%)	Domestic Helpers (%)	Self (Students) (%)	Total (%)
0	0.3	0.8	0.5	0.4
1	1.7	2.7	3.2	2.0
2	6.8	5.8	8.8	7.2
3	15.4	13.6	18.3	15.7
4	25.0	24.1	27.1	25.0
5	30.8	35.6	27.0	30.4
6	9.3	9.7	8.0	9.3
7	5.1	2.9	4.1	4.9
8	3.4	2.7	1.5	3.1
9	1.5	2.1	1.2	1.5
10	0.7	0.2	0.4	0.6
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>4.54</b>	<b>4.49</b>	<b>4.22</b>	<b>4.50</b>
<b>S.D.</b>	<b>1.63</b>	<b>1.59</b>	<b>1.58</b>	<b>1.63</b>
<b>95% C.I.</b>	<b>4.51 – 4.58</b>	<b>4.35 – 4.64</b>	<b>4.12 – 4.33</b>	<b>4.46 – 4.53</b>

ANOVA was used.

$p < 0.0001$

Note: Students with no score or students with other decision maker on food were excluded in the subgroup analysis.

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

Students studying in half-day schools had a significantly lower mean score on eating practice (4.19), compared with those studying in whole-day schools (4.51), with  $p < 0.0001$ .

**Table 4.3.7 Score on eating practice by mode of school**

Score on eating practice	Half-day school (%)	Whole-day school (%)	Total (%)
0	0.6	0.4	0.4
1	1.2	2.0	2.0
2	10.8	7.1	7.2
3	20.5	15.5	15.7
4	27.7	24.9	25.0
5	25.6	30.6	30.4
6	6.3	9.4	9.3
7	2.1	5.0	4.9
8	3.6	3.1	3.1
9	1.2	1.5	1.5
10	0.3	0.6	0.6
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>4.19</b>	<b>4.51</b>	<b>4.50</b>
<b>S.D.</b>	<b>1.58</b>	<b>1.63</b>	<b>1.63</b>
<b>95% C.I.</b>	<b>4.02 – 4.36</b>	<b>4.48 – 4.54</b>	<b>4.46 – 4.53</b>

*T-test was used.*

*$p < 0.0001$*

*Note: Students with no score were excluded in the subgroup analysis.*

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

When score on eating practice obtained from assessment of self-reported data by students was compared with that reported by parents, Pearson’s Correlation was used. A significant positive correlation between them was found, with correlation coefficient 0.261 ( $p < 0.0001$ ).

Both indices were categorised for cross tabulation. A significant association was found between the score on eating practice rated by students and that by parents. A high score on eating practice reported by students was found associated with a high score reported by parents. There was an increased proportion of students who got the highest score on eating practice reported by parents when the score reported by student was increased.

**Table 4.3.8 Score on eating practice reported by students (category) by score reported by parents (category)**

Score on eating practice by parents (category) \ Score on eating practice by student (category)	0-2 (%)	3-4 (%)	5-6 (%)	7-8 (%)	9-10 (%)	Total (%)
0-2	27.2	12.6	6.8	5.3	2.3	9.6
3	22.8	19.7	13.3	10.6	6.1	15.7
4	19.9	27.0	25.2	19.4	11.5	25.0
5	19.4	26.4	35.1	25.9	22.9	30.4
6-10	10.7	14.3	19.5	38.8	57.3	19.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Chi-square test was used.*

*$p < 0.0001$*

*Note: Students with no score reported by themselves or by parents were excluded in the subgroup analysis.*

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

#### Practice Index (PI)

PI was generated with the healthiness of students’ habits of eating the 10 different types of food (i.e. score on eating practice) and whether students had eaten breakfast or not on the survey day. Similar with its two components, female students were found with a significantly higher PI (5.47), compared with male students (5.22), with  $p < 0.0001$ .

**Table 4.3.9 Practice Index by gender**

Practice Index	Male (%)	Female (%)	Total (%)
0	0.3	0.1	0.2
1	1.1	0.6	0.8
2	4.2	2.6	3.4
3	10.0	6.7	8.4
4	17.6	15.2	16.5
5	23.6	25.4	24.4
6	25.7	30.5	28.0
7	8.3	8.8	8.6
8	4.5	5.0	4.7
9	2.8	3.1	3.0
10	1.4	1.6	1.5
11	0.6	0.5	0.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>5.22</b>	<b>5.47</b>	<b>5.34</b>
<b>S.D.</b>	<b>1.78</b>	<b>1.65</b>	<b>1.72</b>
<b>95% C.I.</b>	<b>5.17 – 5.27</b>	<b>5.42 – 5.52</b>	<b>5.30 – 5.38</b>

*T-test was used.*

*$p < 0.0001$*

*Note: Students with no score were excluded in the subgroup analysis.*

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

Students who made their own decision on food choice were found with a significantly lower PI. Those students with parents or domestic helpers as decision makers on food at home were found with a mean score at 5.40 and 5.35 respectively, compared with the mean score of students who were the decision makers on food of their own (5.01), with  $p < 0.0001$ .

**Table 4.3.10 Practice Index by decision maker on food**

Practice Index	Parents (%)	Domestic Helpers (%)	Self (Students) (%)	Total (%)
0	0.1	0.6	0.2	0.2
1	0.7	0.6	1.2	0.8
2	3.0	3.7	5.4	3.4
3	7.9	7.2	10.7	8.4
4	16.0	15.0	19.3	16.5
5	24.5	23.5	24.9	24.4
6	28.9	32.3	24.5	28.0
7	8.7	9.3	7.0	8.6
8	4.9	3.1	3.8	4.7
9	3.2	2.9	1.5	3.0
10	1.5	1.6	1.2	1.5
11	0.6	0.2	0.4	0.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>5.40</b>	<b>5.35</b>	<b>5.01</b>	<b>5.34</b>
<b>S.D.</b>	<b>1.71</b>	<b>1.68</b>	<b>1.70</b>	<b>1.72</b>
<b>95% C.I.</b>	<b>5.36 – 5.44</b>	<b>5.20 – 5.50</b>	<b>4.89 – 5.13</b>	<b>5.30 – 5.38</b>

ANOVA was used.

$p < 0.0001$

Note: Students with no score or students with other decision maker on food were excluded in the subgroup analysis.

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

Students who were studying in half-day schools had a significantly lower PI (4.89), compared with those who were studying in whole-day schools (5.36), with  $p < 0.0001$ .

**Table 4.3.11 Practice Index by mode of school**

Practice Index	Half-day school (%)	Whole-day school (%)	Total (%)
0	0.6	0.2	0.2
1	0.9	0.8	0.8
2	4.8	3.4	3.4
3	13.0	8.2	8.4
4	23.5	16.2	16.5
5	22.3	24.5	24.4
6	22.9	28.2	28.0
7	5.4	8.7	8.6
8	2.1	4.8	4.7
9	3.3	2.9	3.0
10	0.9	1.5	1.5
11	0.3	0.6	0.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>4.89</b>	<b>5.36</b>	<b>5.34</b>
<b>S.D.</b>	<b>1.73</b>	<b>1.72</b>	<b>1.72</b>
<b>95% C.I.</b>	<b>4.71 – 5.08</b>	<b>5.32 – 5.39</b>	<b>5.30 – 5.38</b>

*T-test was used*

*$p < 0.0001$*

*Note: Students with no score were excluded in the subgroup analysis.*

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

When PI was tested against AI, Spearman’s Correlation was used. The correlation between them was significant and in a positive direction with correlation coefficient 0.282 ( $p < 0.0001$ ).

Both indices were categorised for cross tabulation. It was found that PI of students was associated with AI. The higher the PI they achieved, the higher AI they attained. As observed, those with low PI were having low AI as well.

**Table 4.3.12 Practice Index (category) by Attitude Index (category)**

AI (category) PI (category)	0 (%)	1-2 (%)	3-4 (%)	5-6 (%)	Total (%)
0-3	22.9	16.6	9.2	5.2	12.8
4	22.9	18.5	16.5	9.1	16.5
5	25.4	25.7	25.9	19.9	24.4
6	20.2	26.0	30.2	33.3	28.0
7-11	8.7	13.2	18.2	32.4	18.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.*

*$p < 0.0001$*

*Note: Students with no score were excluded in the subgroup analysis.*

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

When PI was tested against KI, Spearman’s Correlation was used. The correlation between them was significant and in a positive direction with correlation coefficient 0.118 ( $p < 0.0001$ ).

Both indices were categorised for cross tabulation. A significant association was found between PI and KI ( $p < 0.0001$ ). The proportion of attaining maximum KI increased when PI increased (from 3.4% to 50.0%).

**Table 4.3.13 Practice Index (category) by Knowledge Index (category)**

<div> <div>KI (category)</div> <div>PI (category)</div> </div>	0-5 (%)	6-7 (%)	8-9 (%)	10 (%)	Total (%)
0-3	23.0	15.9	13.6	10.1	12.8
4	19.8	18.5	16.8	15.3	16.5
5	21.2	24.8	25.3	24.6	24.4
6	21.2	25.4	26.3	30.4	28.0
7-11	14.7	15.4	18.0	19.6	18.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.*

*$p < 0.0001$*

*Note: Students with no score were excluded in the subgroup analysis.*



### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

Significant difference in the mean PI was observed between those students who perceived their own diet as healthy and their counterparts (5.44 vs. 4.30), with  $p < 0.0001$ .

**Table 4.3.14 Practice Index by students’ self-perceived healthiness of their diet**

Practice Index	Healthy (%)	Unhealthy (%)	Total (%)
0	0.1	0.7	0.2
1	0.7	2.6	0.8
2	3.1	7.9	3.4
3	7.3	17.2	8.4
4	15.6	25.8	16.5
5	24.5	25.2	24.4
6	29.2	14.9	28.0
7	8.9	4.3	8.6
8	5.1	0.7	4.7
9	3.2	0.7	3.0
10	1.6	-	1.5
11	0.6	-	0.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Mean</b>	<b>5.44</b>	<b>4.30</b>	<b>5.34</b>
<b>S.D.</b>	<b>1.71</b>	<b>1.50</b>	<b>1.72</b>
<b>95% C.I.</b>	<b>5.40 – 5.48</b>	<b>4.13 – 4.47</b>	<b>5.30 – 5.38</b>

*T-test was used.*

*$p < 0.0001$*

*Note: Students with no score or who did not have any perception of their own diet were excluded in the subgroup analysis.*

### 4.3: Cross Tabulations and Subgroup Analysis – Students’ Eating Practice

Spearman’s Correlation was used to test PI of students against RI of schools for the influence over school policies on students eating preference. The correlation between them was statistically significant and with a negative correlation. The correlation coefficient was -0.052 ( $p < 0.001$ ).

Both indices were categorised for cross tabulation. The association between them was significant ( $p=0.002$ ). However, the pattern of increased proportion of good PI along increased RI was not obvious.

**Table 4.3.15 Practice Index (category) by Regulation Index (category)**

PI (category) \ RI (category)	0 (%)	1-2 (%)	3-4 (%)	5-6 (%)	7-10 (%)	Total (%)
0-3	12.2	10.8	13.5	14.1	15.6	12.8
4	16.4	16.5	15.8	17.3	20.6	16.5
5	23.7	24.6	24.2	26.5	24.3	24.4
6	28.1	29.3	28.1	25.8	25.4	28.0
7-11	19.6	18.8	18.3	16.2	14.1	18.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Chi-square test was used.*

*$p = 0.002$*

*Note: Students with no score were excluded in the subgroup analysis.*

## 4.4: Cross Tabulations and Subgroup Analysis – Perception on Students’ Healthiness

### Perception of Students’ Healthiness

There was a substantially larger proportion of parents whose perception of their children’s diet was the same as that their children had on themselves, viz healthy. A significant association was found between them, with  $p < 0.0001$ .

**Table 4.3.16 Parents’ perception of the healthiness of students’ diet by students’ own perception**

Students’ perception Parents’ perception	Healthy (%)	Unhealthy (%)	Total (%)
Healthy	61.1	33.6	59.4
Unhealthy	14.8	38.4	15.7
Not sure / Don’t know	24.1	28.0	24.9
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Chi-square test was used.

$p < 0.0001$

Note: Students who did not have any perception of their own diet were excluded in the subgroup analysis.

## **4.5: Cross Tabulations and Subgroup Analysis – Summary**

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Female students and students who perceived their own diet as healthy had higher KI, AI and PI than their counterparts. In addition, PI was also higher among those students studying in whole-day schools and with parents as decision makers on food at home, compared with those studying in half-day schools and those decided on food by themselves.

The findings also suggested that there were strong associations among students' knowledge of healthy eating (KI), preference on healthy food (AI) and their healthiness of eating habits (PI).

However, the findings did not show a positive influence of school regulations over students' knowledge, attitude, or eating practice regarding healthy food. As the number of schools being included in the analysis was small, the study may lack sufficient power to detect any positive association.

More attention should be paid on the following types of students who had a higher tendency in skipping breakfast, which may cause deterioration of their health: male students, students who made decision on food by themselves, and students from half-day schools.

Lastly, students' perception of their own healthiness was also consistent with parents' perception.

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## Chapter 5: Further Analysis – Introduction

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This chapter shows the results of further analysis. McNemar's test, Kendall tau-b Correlation and Linear Regression were used for analytical purpose. The structure of this chapter is as follows:

- Section 5.1 presents the findings from McNemar's test;
- Section 5.2 shows the result of Kendall tau-b Correlation;
- Section 5.3 shows out the Linear Regression model; and
- Section 5.4 gives a summary of the chapter.

Similar to the preceding chapter, significant results with a confidence level at 95% were reported and the unweighted data was used when performing the appropriate statistical tests.

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## **5.1: Further Analysis – McNemar's Test**

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**Introduction** In this section, the results of association between pairs of data with a confidence level at 95% were presented. **McNemar's test**, which is a non-parametric method used on nominal data to determine whether the row and column marginal frequencies are equal, was used to test the following:

- Students' preference vs. knowledge of the six food pairs
    - For example, the results would indicate whether students' preference on yogurt was associated with students' recognition of the fact that yogurt was a healthier food choice when compared with ice-cream.
  - Students' self-report vs. parents' report of students' eating practice
    - Students reported their frequencies of eating different kinds of food per day while parents reported their children's eating habits on the same kinds of food at home. Their answers were dichotomised into "healthy" or "unhealthy" before the test was conducted. The results would indicate whether their answers were in line with each other.
  - Students' self-perceived healthiness vs. parents' perception of their children's healthiness
    - Students' self-perceived healthiness was dichotomised into "healthy" or "unhealthy" before the test was conducted. The results would indicate whether the students' self-perception was in line with the perception their parents had of them.
-

## 5.1: Further Analysis – McNemar’s Test

### McNemar’s Test on eating preference and healthier food choice

The association between students’ preference on food and their knowledge of the wholesomeness of food was proved to be significant in all the six food pairs. In other words, students who knew a particular kind of food as healthy had a higher possibility to have a preference for that kind of food. The results were significant.

**Table 5.1.1 Results of McNemar’s Test on eating preference and healthier food choice**

Food A	Food B	p
Yogurt*	Ice-cream	< 0.0001
Hotdog	Raisin wholemeal bread*	< 0.0001
Soya sauce drumstick*	Deep-fried drumstick	< 0.0001
Pure orange juice*	Carbonated drinks	< 0.0001
Fried rice noodles with beef*	Chicken rice with vegetables	< 0.0001
Hamburger and french fries	Spaghetti with fresh tomatoes and beef*	< 0.0001

\* Healthier food

## 5.1: Further Analysis– McNemar’s Test

**McNemar’s Test on healthiness of eating habits reported by students and their parents** Daily eating habits reported by students were associated with the students’ eating habits at home reported by their parents. Frequencies reported by students and parents were first dichotomised into “healthy” or “unhealthy” before the test was conducted. For all 10 types of food, each test was significant.

**Table 5.1.2 Results of McNemar’s Test on healthiness of eating habits reported by students and their parents**

Food type	p
Fruit	< 0.0001
Vegetables	< 0.0001
Dairy Products	< 0.0001
Meat, fish, eggs, peas & beans	< 0.0001
Grains & cereal	< 0.0001
Fried & deep-fried food	< 0.0001
Drinks with added sugar	< 0.0001
Food high in sugar	< 0.0001
Food high in salt	< 0.0001
Food high in fat	< 0.0001



## 5.1: Further Analysis – McNemar’s Test

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<b>McNemar’s Test on perception of healthiness of diet by students and parents</b>	Students’ perception of the healthiness of their own diet was also found associated with parents’ perception of healthiness of children’s diet, with $p < 0.0001$ .
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## **5.2: Further Analysis – Correlation**

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### **Introduction**

In order to identify the factors that were the most influential for students to develop healthy diet for prioritising resources for policy makers, statistical analysis was made to find out the strength of the relationships between different factors with the students' PI. These factors included students' / parents' attitudes towards healthy eating, students' knowledge, food policy of schools and demographics.

**Kendall tau-b Correlation** was applied to study the relationship between each individual factors and students' PI. Kendall's tau-b Correlation is a nonparametric measure of association based on the number of concordances and discordances in paired observations. Concordance occurs when paired observations vary together, and discordance occurs when paired observations vary differently.

Tau-b (T) has the range from -1 to +1, where -1 and +1 represents perfectly concordant relationship and 0 represents discordant relationship between the factor and PI. Correlations with T greater than 0.1 that are significant at 95% confidence interval were reported.

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## 5.2: Further Analysis – Correlation

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<b>Test results and interpretation</b>	<p>In the univariate analysis, PI was significantly correlated with the AI (correlation coefficient = 0.221), parents' perception of their children's diet (correlation coefficient = 0.117) and students' own perceptions of healthiness (correlation coefficient = 0.114), all of them with <math>p &lt; 0.0001</math>. They could be interpreted as follows:</p> <ul style="list-style-type: none"><li>➤ Students' attitude towards healthy food was positively correlated with their eating habits.</li><li>➤ When parents perceived their children's diet as healthy, their children tended to have healthier eating habits as well.</li><li>➤ Students who perceived their own diet as healthy seemed to have healthier eating habits.</li></ul>
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## **5.3: Further Analysis – Linear Regression**

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**Introduction** To find out the contributing factors for students' healthy eating habits, Linear Regression was applied to perform the multivariate analysis. Factors with strong correlation with students' PI were selected to build the model.

Unlike correlation which determined factors' relationship with PI one by one, several factors were taken into account in linear regression to study the effect of a group of independent variables (the chosen factors) on the dependent variable, i.e. PI.

The stepwise method was used for model-building procedure. At each step, one factor was entered to and / or removed from the model. The factor would be accepted by the model if its p-value was smaller than 0.05 and it would be rejected if its p-value was greater than 0.10. The process went on until the factors with the largest effect were entered into the model. The process gave an optimum combination of factors which was the most predictive to the students' PI.

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## 5.3: Further Analysis – Linear Regression

### Test results and interpretation

The following factors formed a model that was the most effective to predict students' PI, despite a very low value of adjusted  $R^2$  (0.115) was recorded. The model showed that the following factors had comparatively higher contribution to PI (with coefficient greater than 0.2):

- Students' perception of their own diet as healthy, coefficient = 0.743
- Parents' perception of children's diet as healthy, coefficient = 0.341
- Students bringing their own lunch or parents delivering lunch to school, coefficient = 0.340
- Restricted sale of drinks with added sugar at tuck shops, coefficient = -0.245
- Attitude Index, coefficient = 0.220
- Type of school: direct subsidy / private / international school, coefficient = 0.214
- Parents with education attainment of university or above, coefficient = 0.201

From the results above, students' eating habits were mainly shaped by their own perception of healthiness, parents' perception of the children's healthiness, having the practice of eating home-provided lunch, their attitude towards eating preference, students' studying in direct subsidy / private / international schools and parents' higher education attainment. Interestingly, the restriction on sales of drinks with added sugar at tuck shop was not found to be positively correlated with the resulting PI. Although there were other contributing factors such as decision maker on food, students' class and gender, their effects on PI were relatively small.

### **5.3: Further Analysis – Linear Regression**

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However, these 10 factors altogether were only able to explain about one-tenth (11.5%) of variations of students' eating practice. It meant that most variations of students' eating practice also depended on other factors. It reflected the limitations came with the current measuring tool that PI was only a self-developed tool which comprised a series of non-validated food frequency questions. Even though the questions had taken reference from other local surveys and the Food Guide Pyramid, some areas might not be well covered.

Moreover, for PI scoring, students were required to have no food that was fried and deep-fried, high in sugar, salt or fat, and no drinks with added sugar per day in the past seven days for achieving one score on each items respectively. In reality, it is not easy for primary school students to fulfil such an ideal good eating habit which avoided all the above-named unhealthy food; thus the computation of PI maybe too rigorous for monitoring students' eating habit.

In addition to misclassification, recall bias on the past seven days' eating habits and the giving of socially desirable answers for pleasing their teachers might also exist.

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## 5.3: Further Analysis – Linear Regression

**Table 5.3.1 Linear Regression model**

Factor	Unstandardised Coefficients (B)	p	95% C.I. for B	
			Lower Bound	Upper Bound
Students' perception of their own diet as healthy	0.743	<0.001	0.450	1.035
Parents' perception of their children's diet as healthy	0.341	<0.001	0.202	0.480
Students bringing their own lunch or parents delivering lunch to school	0.340	0.007	0.092	0.589
Restricted sale of drinks with added sugar at tuck shops	-0.245	<0.001	-0.364	-0.127
Attitude Index	0.220	<0.001	0.192	0.249
Types of schools: Direct subsidy / Private / International Schools	0.214	0.004	0.068	0.360
Parents with university education or above	0.201	0.037	0.012	0.390
Parents as decision makers on food at home	0.191	0.003	0.064	0.318
Students' class: P5	-0.176	0.002	-0.286	-0.065
Students' sex: female	0.127	0.026	0.015	0.238

**Model Summary**

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.344	0.118	0.115	1.618

## **5.4: Further Analysis – Summary**

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McNemar's test, Kendall's tau-b Correlation and Linear Regression were used to test the relationship between variables. The results suggested strong associations among students' knowledge of food (Knowledge Index), attitude towards food preference (Attitude Index) and their eating practice (Practice Index).

Besides, analyses also verified that answers given by parents regarding the perceived healthiness of students' diets and students' eating habits were also highly associated with that reported by students.

Based on the correlation and linear regression results, students' eating habits were influenced by their own perception of healthiness, parents' perception of their children's healthiness, having the habit of bringing own lunch or having lunch delivered to school by parents (i.e. having home-provided lunch), their attitude towards eating preference, students' studying at direct subsidy / private / international schools and the higher education attainment of their parents. The failure of finding an association between regulations in the school and eating habit of students could be attributed to insufficient power of the study due to small sample size of schools.

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## Chapter 6: Conclusion

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### **Students' eating practice**

Students generally ate healthy food with a satisfactory frequency. However, fewer students ate vegetables and fruit up to a healthy standard. Moreover, students ate unhealthy food quite often. Since only frequency of taking different types of food was studied without knowing the eating portion, there would be a need for further investigation.

Besides, more attention should be paid to the following groups of students who had a higher tendency on skipping breakfast; students who made decision on food by themselves and those studying in half-day schools.

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### **Relationship between students' knowledge, attitude and practice of healthy eating**

With the weighting, students' knowledge of healthy eating was generally very good (KI: 8.12 out of 10). However, such a knowledge did not lead to good attitude towards eating preference and eating habits, as revealed by the rather low average AI (2.57 out of 6) and PI (5.30 out of 11). It was particularly worrying that 18.9% of the students scored zero in AI, indicating that these students preferred all unhealthy food options in the six food groups being tested. In addition, more than half of the students (51.3%) had a PI of only five points or below, meaning that they had eaten half or more than half of the 10 given food groups with inappropriate frequency.

This observation was consistent with the students' selection criteria for food. Cleanliness, hygiene and taste appeared to be more important than freshness and nutritional value when choosing food.

Furthermore, statistical results showed that there were strong associations between students' knowledge of healthy eating (KI), preference on healthy food (AI) and the healthiness of their eating habits (PI). PI increased when there was an upward movement in Knowledge and Attitude Indices.

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## **Chapter 6: Conclusion**

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### **Relationship between students' practice of healthy eating and other personal factors**

In addition, students' eating habits were found associated with the following factors: both students' own perception and their parents' perception of the students' healthiness; having the practice of eating home-provided lunch; students' attitude towards eating preference; students' studying at direct subsidy / private / international schools; and the higher education attainment of the parents.

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### **The role of school in students' eating practice**

About half of the schools had healthy lunch policy (61.9%) and healthy snack policy (47.7%) at school respectively. It is noteworthy that about three-tenth of the primary schools did not have any healthy eating policy.

Both parents and schools perceived that offering health education to students and promoting healthy eating policy in school were effective measures to promote healthy eating habits among primary school students. Offering health education to parents and nurturing co-operation between schools and parents were also widely supported by school representatives.

The number of healthy eating policies adopted by schools was not strongly associated with the students' eating practice. Instead, school lunch arrangement seemed to be important that those students who brought their own lunch or had parents delivered lunch to school tended to have healthier eating practice.

Along with the above, the majority of parents welcomed the stipulation of regulations on food. Schools are thus encouraged to stipulate regulations for lunch caterers, tuck shop and vending machine operators about food / drink merchandising as these are the possible sources where students can get their supply of unhealthy food at school.

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## Chapter 6: Conclusion

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### **The role of parents in students' eating practice**

On top of school environment, family environment and home education are also important for students to develop healthy eating practice since parents were found to have positive effects on students' eating practice when they were the key decision makers on food at home.

Although children's preference was one of the major factors in parents' consideration in food selection, parents still had higher concern on the nutritional value. The results showed that those students with home-provided lunch and home-chosen food for them had higher PI. In addition, those students with parents or domestic helpers as decision makers on food usually had a habit of eating breakfast. Therefore, there is a need to provide health education to parents in order to establish a healthy eating practice for their children.

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### **Limitations**

This study has certain limitations. The cross-sectional approach could only be used to reflect and determine the students' knowledge, attitudes and practices of healthy eating at a particular point in time. No causal or time relationship between factors could be found, a subsequent follow-up study may be needed for further investigation. Moreover, only a proportion of local primary schools were included in this study and only Primary 4 and Primary 5 students were recruited for the study. Although efforts have been made to ensure the randomization, bias may still exist in case those students who had not been approached or those schools that declined invitation possessed particular statistical characteristics. The characteristics of the non-respondents are also unknown.

The questionnaires in this study were self-administered. Reporting of dietary pattern by students' and parents' were subject to recall error, and no validation with the actual eating habit of students was made. Besides, the questionnaire approach might also have led to some socially desirable answers.

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## **Chapter 6: Conclusion**

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Final regression model may only explain one-tenth of the variations of students' eating practice; and there may be potential factors related to students' eating practice which were not included in the design of the questionnaires, hence were unknown to the study measures. Although the questions on students' eating practice had made reference to a number of local healthy eating questionnaires and the Food Guide Pyramid, only eating frequency but not the actual quantity was assessed. Hence, the outcome variables (score on eating practice and its derivate PI) thus obtained could only be regarded as surrogates. Besides, the computation of PI scoring required students to have no food that was fried and deep-fried, high in sugar, salt or fat, and no drinks with added sugar per day in the past seven days. It was indeed hard for primary students to have such an ideal eating habit without eating any of the above-named unhealthy food. Hence, there was a possibility that the computed PI was too rigorous for monitoring students' eating habits.

Despite its limitations, the study provided useful information on students' knowledge, attitudes and practices of healthy eating, the attitudes toward healthy eating among parents and the existing nutritional environments among primary schools. The results generated constructive ideas for the healthy eating movement at schools.

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## Chapter 7: Recommendations

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1. The study results showed that both parents and school representatives supported offering health education to students (59.8% and 84.1%) and promoting healthy eating policy in school (51.1% and 51.3%). Moreover, nearly 40% of the participating schools supported more parental education and collaboration with the parents. This provides a strong basis for the “EatSmart@school.hk” campaign that students, their parents and the nutritional environment in school should all be targeted for intervention. Indeed, overseas experience has shown that multi-dimensional approaches could make a more significant impact on promoting healthy eating in school.
  2. There was a definite knowledge-attitude gap where healthy eating is concerned. Students generally had good knowledge on healthy food (mean KI 8.1 on a 10-point scale) but fair attitude and practice towards healthy eating (mean AI 2.6 on a six-point scale and mean PI 5.3 on a 11-point scale). A large proportion of students (89%) perceived their eating habits as at least acceptable, in contrast to the relatively unsatisfactory mean PI. Thus, any nutritional education programme with students as target groups should put greater emphasis on shaping a positive attitude towards healthy eating and the building up of a healthy eating practice. For example, creative online game and experiential learning such as cooking competition may help students transfer their knowledge into practice with fun. To ease the workload of teachers, development of teaching resources that can be readily used in classroom sessions or extra-curricular activities could be considered.
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## **Chapter 7: Recommendations**

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3. Most of the parents (83%) were the decision makers on food at home. Parents could serve as role models for children and play a crucial role in teaching children how to make healthy choices. Although parents may prepare lunch and snacks for students, their relative influence over food provided at school is much lower. About 90% of the schools had working groups to monitor the catering service for students, but only 70% of the working groups consisted of parent representatives. Moreover, a majority of the parents had no idea on the types of food and drinks available to their children at school tuck shops and vending machines, where unhealthy items such as energy-dense food and drinks with added sugar were commonly found. Thus, parents should be more actively engaged and empowered to work with the school management in promoting healthy eating in school. For example, parents could be encouraged to participate in the formulation of healthy eating policy, to join the catering service working group, to select catering service providers and monitor their performance or help out at school as volunteers during lunch breaks and recesses. Parents can be provided with practical ways to prepare healthy lunch and snacks through publicity activities and educational materials.
  
  4. At present, only 60% of schools had healthy lunch policy, and one half of all schools did not stipulate any requirements for their lunch caterers. Therefore, it is not surprising to find that students who brought their own food or had food delivered by parents had a healthier eating practice. There is much need for schools to develop a healthy lunch policy. In this respect, the “Nutritional Guidelines on School Lunch for Primary School Students” produced by DH should be widely promulgated to schools for their inclusion in the contracts with lunch caterers, as well as for monitoring by the users, namely students, parents and schools.
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## Chapter 7: Recommendations

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5. Both schools and parents viewed nutritional value as a major consideration in choosing food. However, students regarded hygiene, taste and freshness of food as more important factors. Among the parents who perceived that healthy eating was not easy to sustain, 26% of them thought that healthy food did not taste good. It is therefore important that food traders should provide not only healthy but also hygienic and tasty recipes for students. Communication between schools/ parents and the food traders, together with the encouragement from parents/ students are crucial for a paradigm shift in concept to that healthy food is also delicious and attractive.
  
  6. It was found that more than half of the schools had tuck shops (53.9%) or vending machines (56.5%). It is not unusual for students to buy their favourite food from tuck shops or vending machines as lunch substitutes and snacks. As noted earlier in this section, many unhealthy food items were available at tuck shops and vending machines. With many unhealthy food items available to choose, students were likely to select and eat unhealthy snack. A qualitative study conducted by DH in 2004 also indicated that healthy food was seldom available in school. To facilitate easier making of healthier choice, DH's "Nutritional Guidelines on Snacks for Primary School Students" about choosing healthy snacks should be widely disseminated to schools for their reference in establishing healthy snack policy and making contractual agreement with their tuck shop and vending machine providers.
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## **Chapter 7: Recommendations**

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7. Schools should liaise with lunch caterers, tuck shop owners and vending machine operators regarding food provision for schools to specify clearly on the various requests and restrictions on food. It is important for lunch caterers, tuck shop owners and vending machine operators to understand their important roles in keeping students healthy. Commitment to the agreed regulations and regular reviews on the performance are important for reaching the ultimate goal of establishing healthy eating practice among primary school students.
  8. Various marketing surveys commissioned by DH in the last few years have consistently shown that advertisements in the mass media, especially those on TV, remained the most common source of health information for the general public. With the experience of launching the “2 plus 3 a day” campaign which promotes optimal health by eating at least two servings of fruits and three servings of vegetables as part of a balanced diet every day by DH, it is advisable for the Department to carry on launching campaigns for drawing students’ and parents’ attention to eat more healthy food and say “no” to the unhealthy ones. Many studies have found campaign messages which disseminated through mass media including TV, radio, newspaper, and advertisement are effective in reaching a large number of target populations for raising awareness and changing attitudes.
  9. In order to keep a place with comprehensive healthy eating information for others’ easy reference, a thematic website like “Eat Smart, Play Hard” organised by the Food and Nutrition Service, Department of Agriculture of the United States (<http://www.fns.usda.gov/eatsmartplayhard/>) or the above-mentioned “2 plus 3 a day” campaign conducted by DH (<http://2plus3.cheu.gov.hk/>), is suggested to be setup for students, parents, teachers and food caterers.
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## Chapter 7: Recommendations

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10. For those schools with tuck shops, less than 40% of the parents knew what kind of food/ drinks their children bought there. The study also found that 26.4% of the parents had no idea on the healthiness of their children's diet. These figures implied that parents should enhance communication with their children in order to know more about their eating habits.
  11. Moreover, nearly two-fifth of the parents (39.3%) said that healthy eating habit was not easy to sustain as they did not have enough time for food preparation and found that healthy food is tasteless and short of variety. Parental education should be provided to help the parents prepare healthy food for their children, to provide easy-to-follow cooking recipes and to introduce parental skills of encouraging children to eat healthily.
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**Conclusion** It is everyone's responsibility to create a supportive environment in helping our primary school students to be able to make the wise choice and choose good food for themselves.

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21. LOK SIN TONG PRIMARY SCHOOL
22. NG WAH CATHOLIC PRIMARY SCHOOL
23. PO KOK PRIMARY SCHOOL
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32. ST. STEPHEN'S CHURCH PRIMARY SCHOOL
33. STEWARDS POOI YIN PRIMARY SCHOOL PM
34. T.W.G.Hs. WONG SEE SUM PRIMARY SCHOOL
35. TACK CHING PRIMARY SCHOOL
36. TAI PO OLD MARKET PUBLIC SCHOOL
37. THE TRUE LIGHT MIDDLE SCHOOL OF HONG KONG PRIMARY SECTION
38. TSEUNG KWAN O GOVERNMENT PRIMARY SCHOOL
39. TSUEN WAN GOVERNMENT PRIMARY SCHOOL
40. TUNG WAH GROUP OF HOSPITALS LEE CHI HUNG MEMORIAL PRIMARY SCHOOL (CHAIWAN)
41. TWS ST. BONAVENTURE CATHOLIC PRIMARY SCHOOL
42. YAUMATI KAIFONG ASSOCIATION SCHOOL
43. YING YIN CATHOLIC PRIMARY SCHOOL
44. YUEN LONG PUBLIC MIDDLE SCHOOL ALUMNI ASSOCIATION PRIMARY SCHOOL



## Appendix: Questionnaires





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## Survey on Diet of Students (For Students)

Hello, students!

We would like to know your daily eating habits. Please answer the following questions. Don't get influenced by the others when completing the questionnaire.

Please be assured that this is an anonymous questionnaire, and the information given by you will be used for collective analysis only.

**(Please put a "X" in the appropriate ☐)**

Primary: ☐<sub>1</sub> P.4 ☐<sub>2</sub> P.5

Class:

Sex: ☐<sub>1</sub> Male ☐<sub>2</sub> Female













Date of birth: 

Day		
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Month		
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1. What are your eating preferences in the following groups of food or drinks?

In each of the following groups, please put a "X" in the ☐ next to the food or drink that **you prefer to eat:**

1a.	<input type="checkbox"/> <sub>1</sub> Yogurt		<input type="checkbox"/> <sub>2</sub> Ice cream	
1b.	<input type="checkbox"/> <sub>1</sub> Hotdog		<input type="checkbox"/> <sub>2</sub> Raisin wholemeal bread	
1c.	<input type="checkbox"/> <sub>1</sub> Soya sauce drumstick		<input type="checkbox"/> <sub>2</sub> Deep-fried drumstick	
1d.	<input type="checkbox"/> <sub>1</sub> Pure orange juice		<input type="checkbox"/> <sub>2</sub> Carbonated drinks	
1e.	<input type="checkbox"/> <sub>1</sub> Fried rice noodles with beef		<input type="checkbox"/> <sub>2</sub> Chicken rice with vegetables	
1f.	<input type="checkbox"/> <sub>1</sub> Hamburger and fries		<input type="checkbox"/> <sub>2</sub> Spaghetti with fresh tomatoes and beef	

Please put a “X” in the appropriate ☐ or ☐ . For each question, please choose one answer only.

2. Have you had your breakfast **today**?

☐<sub>1</sub> Yes, I had:  for breakfast

☐<sub>2</sub> No, because (Please choose **one** answer only):

☐<sub>1</sub> I do not have enough time

☐<sub>2</sub> I am on diet

☐<sub>3</sub> I want to save money

☐<sub>4</sub> I am not used to having breakfast













☐<sub>5</sub> of other reasons:

3. In the past one week, the number of times I ate the following food **on average every day** is about:





	Daily					
	More than twice	Twice	Once	Less than once	Never	Don't know
3a. <b>Fruits</b>	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
3b. <b>Vegetables</b>	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
3c. <b>Dairy products</b> (e.g. milk, cheese, yogurt)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
3d. <b>Meat, fish, eggs, peas and beans</b>	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
3e. <b>Grains and cereals</b> (e.g. rice, noodles , bread)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
3f. <b>Fried and deep-fried food</b> (e.g. fried pork chop, French fries)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
3g. <b>Drinks with added sugar</b> (e.g. carbonated drinks, lemon tea with added sugar)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
3h. <b>Food high in sugar</b> (e.g. sweets, chocolate)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
3i. <b>Food high in salt</b> (e.g. preserved fruits, cheese rings)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
3j. <b>Food high in fat</b> (e.g. potato crisps, ice cream)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>

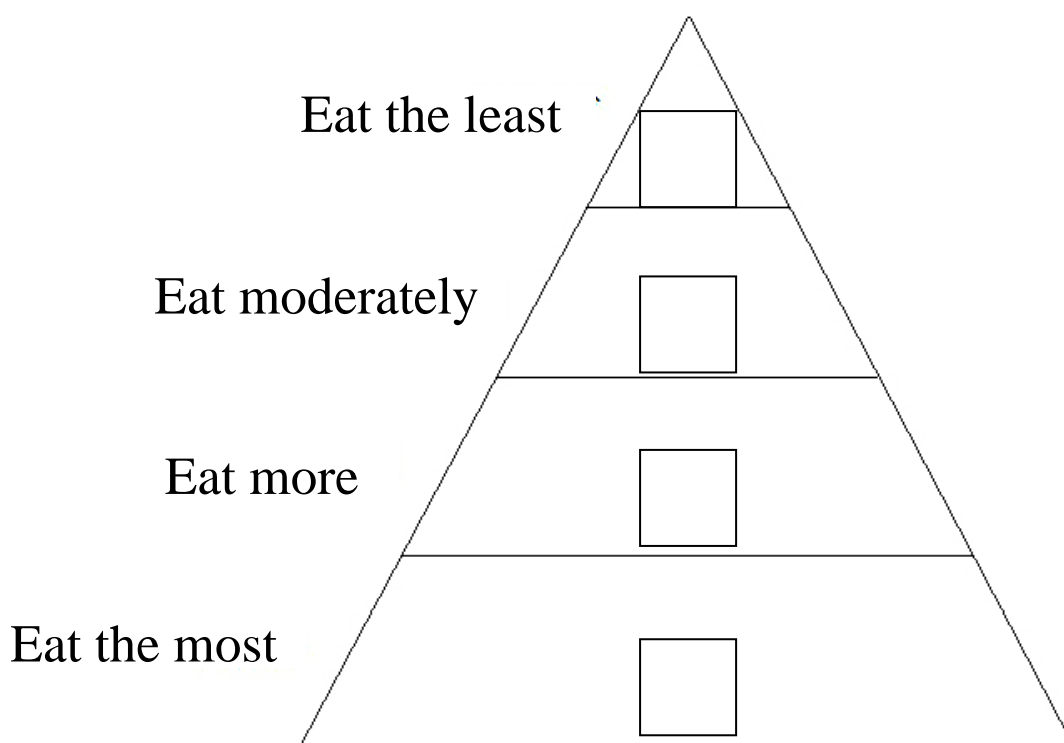
4. What do you think is the healthier choice in the following groups of food or drinks?

In each of the following groups, put a “X” in the ☐ next to the food or drink that you think is **healthier**:

4a.	<input type="checkbox"/> <sub>1</sub> Yogurt 	<input type="checkbox"/> <sub>2</sub> Ice cream 
4b.	<input type="checkbox"/> <sub>1</sub> Hotdog 	<input type="checkbox"/> <sub>2</sub> Raisin wholemeal bread 
4c.	<input type="checkbox"/> <sub>1</sub> Soya sauce drumstick 	<input type="checkbox"/> <sub>2</sub> Deep-fried drumstick 
4d.	<input type="checkbox"/> <sub>1</sub> Pure orange juice 	<input type="checkbox"/> <sub>2</sub> Carbonated drinks 
4e.	<input type="checkbox"/> <sub>1</sub> Fried rice noodles with beef 	<input type="checkbox"/> <sub>2</sub> Chicken rice with vegetables 
4f.	<input type="checkbox"/> <sub>1</sub> Hamburger and fries 	<input type="checkbox"/> <sub>2</sub> Spaghetti with fresh tomatoes and beef 

5. Please insert the numbers that represent the following food groups (**1 to 4**) into the appropriate boxes in the “Food Guide Pyramid”.

<p><b>(1)</b> Vegetables, gourds and fruits</p> 	<p><b>(2)</b> Grains and cereals: congee, pasta, noodles, rice and bread</p> 
<p><b>(3)</b> Dairy products, meat, fish, eggs, peas and beans</p> 	<p><b>(4)</b> Oil, salt and sugar</p> 



6. (You may choose **more than one** option for this question) When you choose food, what would you consider?

- ☐<sub>1</sub> Cleanliness and hygiene   
 ☐<sub>2</sub> Nutritional value   
 ☐<sub>3</sub> Taste  
☐<sub>4</sub> Freshness   
 ☐<sub>5</sub> Price   
 ☐<sub>6</sub> Convenience  
☐<sub>7</sub> Preference of parents   
 ☐<sub>8</sub> Choice of other schoolmates

7. You consider your eating habits as: (Please put a “X” in the appropriate ☐).

Please choose **one** answer only.)

- ☐<sub>1</sub> Very healthy   
 ☐<sub>2</sub> Healthy   
 ☐<sub>3</sub> Acceptable  
☐<sub>4</sub> Unhealthy   
 ☐<sub>5</sub> Very unhealthy   
 ☐<sub>6</sub> Don't know

☺ End of questionnaire. Thanks!☺

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### Survey on Diet of Students (For Parents)

Hello, parents/guardians!

We would appreciate it if you could spend five to ten minutes to fill out this questionnaire, which would enable us to learn more about your child's dietary patterns. Your feedback can help the Department of Health to improve the health of Hong Kong people with better implementation and evaluation of health promotion activities. The questionnaire is anonymous. All personal information is confidential and will be used for data analysis only.

Please return the completed questionnaire to the class teacher via your child. Thanks!

Please complete this questionnaire on your own. Do not discuss with your child.

**Unless otherwise specified, please choose only one answer for each question. Please put a "X" in the appropriate ☐ or ☐.**

#### Information on child

Primary: ☐<sub>1</sub>

P.4

☐<sub>2</sub>

P.5

Class:

Sex: ☐<sub>1</sub>

Male

☐<sub>2</sub>

Female

Date of birth:

Day			Month		
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1. In the past one week, on how many days did your child eat breakfast?

☐<sub>1</sub>

1 day

☐<sub>2</sub>

2 days

☐<sub>3</sub>

3 days

☐<sub>4</sub>

4 days

☐<sub>5</sub>

5 days

☐<sub>6</sub>

6 days

☐<sub>7</sub>

Every day

☐<sub>8</sub>

Don't know

2. When at home, who is usually the one to decide what kind of food to eat?

☐<sub>1</sub>

Parents

☐<sub>2</sub>

Children

☐<sub>3</sub>

Domestic helper

☐<sub>4</sub>

Others. Please specify:

3. In the past one week, your child's **average frequencies** of consuming the following kinds of food **every day at home** are approximately:

	Daily					
	More than twice	Twice	Once	Less than once	Never	Don't know
a. <b>Fruits</b>	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
b. <b>Vegetables</b>	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
c. <b>Dairy products</b> (e.g. milk, cheese, yogurt)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
d. <b>Meat, fish, eggs, and legumes</b>	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
e. <b>Grains and cereals</b> (e.g. rice, noodles, bread)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
f. <b>Fried and deep-fried food</b> (e.g. fried pork chop, French fries)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
g. <b>Drinks with added sugar</b> (e.g. carbonated drinks, lemon tea with added sugar)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
h. <b>Food high in sugar</b> (e.g. sweets, chocolate)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
i. <b>Food high in salt</b> (e.g. preserved fruits, cheese rings)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>
j. <b>Food high in fat</b> (e.g. potato crisps, ice cream)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>

4. Do you consider the diet of your child healthy?

- ☐<sub>1</sub> Healthy      ☐<sub>2</sub> Unhealthy . Please specify the reasons:
- ☐<sub>3</sub> Not sure/Don't know

5. When you choose food for your child, does the label on the food package affect your choice?

- ☐<sub>1</sub> Yes      ☐<sub>2</sub> No
- ☐<sub>3</sub> Have not been paying attention to the label on the food package      ☐<sub>4</sub> Not sure/Don't know

6. (You may choose **more than one** option for this question) When you choose food for your child, your consideration would be:

- ☐<sub>1</sub> Cleanliness and hygiene      ☐<sub>2</sub> Nutritional value      ☐<sub>3</sub> Taste      ☐<sub>4</sub> Freshness
- ☐<sub>5</sub> Price      ☐<sub>6</sub> Convenience      ☐<sub>7</sub> Preference and taste of child

7. Are you aware of what food or drinks your child usually buys at the school tuck shop?

- ☐<sub>1</sub> No, I am not
- ☐<sub>2</sub> Yes, I am. They are:
- ☐<sub>3</sub> Not applicable, because I do not allow my child to buy snacks
- ☐<sub>4</sub> Not applicable, because there is no tuck shop in school

8. Does your child bring snacks to school?

- ☐<sub>1</sub> Yes, always. Snacks usually include:
- ☐<sub>2</sub> Yes, Sometimes. Snacks usually include:
- ☐<sub>3</sub> No
- ☐<sub>4</sub> Not sure/Don't know

9. Do you agree that the following regulations should be adopted by the **school tuck shop**?

	Agree	Disagree	No comment
a. Compulsory sale of <b>vegetables</b> (e.g. boiled corn, salad) every day	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
b. Compulsory sale of <b>fresh fruits</b> every day	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
c. Restricted sale of <b>drinks with added sugar</b> (e.g. carbonated drinks, lemon tea with added sugar)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
d. Restricted sale of <b>food high in sugar</b> (e.g. sweets, chocolate)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
e. Restricted sale of <b>food high in salt</b> (e.g. preserved fruits, cheese rings)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
f. Restricted sale of <b>food high in fat</b> (e.g. potato crisps, ice cream)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
g. Other regulations (Please specify):			

10. Do you agree that the following regulations should be adopted for the **school lunch arrangements**?

	Agree	Disagree	No comment
a. Stipulation of the amount of <b>grains and cereals</b> (e.g. rice, noodles, pasta) provided by the lunch box every day	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
b. Stipulation of the amount of <b>vegetables</b> provided by the lunch box every day	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
c. Stipulation of the amount of <b>meat, fish, poultry, eggs and legumes</b> provided by the lunch box every day	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
d. Limits on the frequency of using <b>processed or preserved meat</b> (e.g. sausage) in the lunch box per week	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
e. Limits on the frequency of using <b>deep-fried food</b> (e.g. fried chicken wings, fried pork chop) as the main dish of the lunch box per week	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
f. Stipulation of the frequency of serving <b>fruits</b> alongside lunch per week	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>
g. Other regulations (Please specify):			

11. Do you think healthy eating habits are easy to sustain?

☐<sub>1</sub> Yes

☐<sub>2</sub> No ⇒ Why?

☐<sub>1</sub> Healthy food is more expensive

☐<sub>2</sub> Healthy food lacks variation

☐<sub>3</sub> No time to prepare healthy food

☐<sub>4</sub> Healthy food does not taste good

☐<sub>5</sub> Eating out is frequent

☐<sub>6</sub> Others. Please specify:

12. (You may choose a maximum of **three options** for this question) To promote healthy eating habits among primary school students, the measure(s) you support most is/are:

☐<sub>1</sub> Providing teachers with resources and training on health education

☐<sub>2</sub> Promoting healthy eating policy in school

☐<sub>3</sub> Offering health education to students

☐<sub>4</sub> Offering health education to parents

☐<sub>5</sub> Nurturing the cooperation between parents and the school

☐<sub>6</sub> Legal stipulation of categories of food and drinks offered by school

☐<sub>7</sub> Encouraging food industry to provide more healthy food and drinks

☐<sub>8</sub> Drafting guidelines or laws that regulate the advertisement of drinks and food

☐<sub>9</sub> Compulsory labelling of food and drinks with their nutrition information

☐<sub>10</sub> Offering health education to the public

☐<sub>11</sub> Others. Please specify:

☐<sub>12</sub> No comment

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### **Information on parent/guardian**

Your sex:

☐<sub>1</sub> Male

☐<sub>2</sub> Female

Relationship with your child:

☐<sub>1</sub> Parent

☐<sub>2</sub> Grandparent

☐<sub>3</sub> Others. Please specify:

Education level:

☐<sub>1</sub> Primary education or below

☐<sub>2</sub> Secondary education (Secondary 1-3)

☐<sub>3</sub> Secondary education (Secondary 4-5)

☐<sub>4</sub> Matriculation

☐<sub>5</sub> College

☐<sub>6</sub> University or above

Monthly household income:

☐<sub>1</sub> \$3,999 or less

☐<sub>2</sub> \$4,000 - \$7,999

☐<sub>3</sub> \$8,000 - \$9,999

☐<sub>4</sub> \$10,000 - \$14,999

☐<sub>5</sub> \$15,000 - \$19,999

☐<sub>6</sub> \$20,000 - \$24,999

☐<sub>7</sub> \$25,000 - \$29,999

☐<sub>8</sub> \$30,000 - \$39,999

☐<sub>9</sub> \$40,000 - \$59,999

☐<sub>10</sub> \$60,000 or more

**✂ End of questionnaire. Thank you! ✂**

## Survey on Nutritional Environment and Facilities in School

Thank you very much for filling out this questionnaire. This survey aims at reviewing the nutritional environment and facilities in local primary schools. The results of the survey will provide significant input for the Department of Health to plan measures that promote healthy eating among primary school students. The questionnaire is by no means an appraisal or examination. All information collected will be used solely for the survey only. No information on individual schools will be disclosed. If you have any enquiry, please contact our Research Officer, Ms Tang, at 2835 1820.

Please put a “×” in the appropriate ☐ or ☐. Unless otherwise specified, please choose **one answer** only.

### A. Basic information on school

Name of school: \_\_\_\_\_

Mode of school: A.M. School / P.M. School / Whole-day School\*

Gender of students: Co-educational School / Boy's School / Girl's School\*

Total no. of students in school: \_\_\_\_\_ students

No. of Primary 4 and 5 students: \_\_\_\_\_ students

Any religion? ☐<sub>1</sub> Yes (Please specify: \_\_\_\_\_)  
☐<sub>2</sub> No

Date of completing this questionnaire (Day/Month/Year): \_\_\_\_ / \_\_\_\_ / 2006

Name of person completing this questionnaire: \_\_\_\_\_

Position/Rank: \_\_\_\_\_

Contact number: \_\_\_\_\_

**\*Please delete whichever is inapplicable.**



## **B. Healthy eating policy in school**

1. **(You may choose more than one option for this question)** Has your school established the following policies to promote healthy eating both in and outside school among your students?

- ☐<sub>1</sub> Healthy snack  
☐<sub>2</sub> Healthy lunch  
☐<sub>3</sub> Healthy eating at home  
☐<sub>4</sub> Others (Please specify: \_\_\_\_\_)  
☐<sub>5</sub> No healthy eating policy established

2. Has your school formed any dedicated working groups to arrange for and monitor the catering service for students?

- ☐<sub>1</sub> No  
☐<sub>2</sub> Yes. Members of the group include **(You may choose more than one option):**  
☐<sub>1</sub> Principal/Vice principal      ☐<sub>2</sub> Teaching staff representative  
☐<sub>3</sub> Parent representative      ☐<sub>4</sub> Student representative  
☐<sub>5</sub> Caterer representative  
☐<sub>6</sub> Community organization or professional representative  
☐<sub>7</sub> Others (Please specify: \_\_\_\_\_)

Apart from the working group, please specify any other channels for teachers, parents and students to participate in catering arrangements: \_\_\_\_\_

3. When your school chose the current **lunch caterer**, the **3 most important factors** for consideration were **(Please rank the factors in the boxes: “1” meaning the most important, “2” meaning the second most important and “3” the third):**

- ☐<sub>1</sub> Company size  
☐<sub>2</sub> Food prices  
☐<sub>3</sub> Taste of food and food preferences of students  
☐<sub>4</sub> Nutritiveness and healthiness of food  
☐<sub>5</sub> Record of food safety incidents  
☐<sub>6</sub> Others (Please specify: \_\_\_\_\_)  
☐<sub>7</sub> Not applicable as the school has no contract caterer **(Please put a “×” in the box on the left)**

4. When your school chose the current **tuck shop contractor**, the **3 most important factors** for consideration were **(Please rank the factors in the boxes: “1” meaning the most important, “2” meaning the second most important and “3” the third):**

- ☐<sub>1</sub> Company size  
☐<sub>2</sub> The same contractor as the lunch caterer  
☐<sub>3</sub> Food product selections and food preferences of students  
☐<sub>4</sub> Nutritiveness and healthiness of food  
☐<sub>5</sub> Food prices  
☐<sub>6</sub> Others (Please specify: \_\_\_\_\_)  
☐<sub>7</sub> Not applicable as the school tuck shop is not contracted out **(Please put a “×” in the box on the left)**

5. **(You may choose a maximum of three options for this question)** To promote healthy eating habits among primary school students, the measures your school supports most is/are:
- ☐<sub>1</sub> Providing teachers with resources and training on health education
  - ☐<sub>2</sub> Implementing healthy eating policy in school
  - ☐<sub>3</sub> Offering health education to students
  - ☐<sub>4</sub> Offering health education to parents
  - ☐<sub>5</sub> Nurturing the cooperation between parents and the school
  - ☐<sub>6</sub> Legal stipulation of categories of food and drinks offered by school
  - ☐<sub>7</sub> Encouraging food industry to provide more health food and drinks
  - ☐<sub>8</sub> Drafting guidelines or laws that regulate the advertisement of drinks and food
  - ☐<sub>9</sub> Compulsory labelling of food and drinks with their nutrition information
  - ☐<sub>10</sub> Offering health education to the public
  - ☐<sub>11</sub> Others (Please specify): \_\_\_\_\_
  - ☐<sub>12</sub> No comment

### **C. Current school lunch arrangements**

6. **(You may choose more than one option for this question)** Currently, the school lunch arrangement is as follows:
- ☐<sub>1</sub> Ordering lunch boxes from caterer (Name of caterer: \_\_\_\_\_)\*
  - ☐<sub>2</sub> Caterer serving lunch in school (Name of caterer: \_\_\_\_\_)\*
  - ☐<sub>3</sub> Students bring their own lunch or parents deliver lunch to school
  - ☐<sub>4</sub> Students may buy their own lunch from outside the school
  - ☐<sub>5</sub> Others (Please specify: \_\_\_\_\_)
  - ☐<sub>6</sub> We are a half-day school ⇒ **Please proceed to Section (D)**

\* Please supply the menu, price list and quantities regarding the lunch ordered from the caterer in the past week (Please refer to Appendix 1 for details). Please also ask for a standardized recipe for the most popular daily selections for each school days based on the selections made during this week from the lunch caterer (Please refer to Appendix 2 for details).

7. **(You may choose more than one option for this question)** Who can take part in deciding the caterer's lunch menu choices for your students?
- ☐<sub>1</sub> Teachers
  - ☐<sub>2</sub> Students
  - ☐<sub>3</sub> Parents
  - ☐<sub>4</sub> Lunch caterer
  - ☐<sub>5</sub> Parent-Teacher Association
  - ☐<sub>6</sub> Others (Please specify: \_\_\_\_\_)

8. Has your school stipulated the following requirements for the lunch caterer?

	Yes	If yes, please provide details on the requirements for the lunch caterer	No
a. Stipulation of the amount of <b>grains and cereals</b> (e.g. rice, noodles, pasta) provided by the lunch box every day	<input type="checkbox"/> <sub>1</sub>	Supply a daily minimum of: _____ (Please specify the measuring unit, e.g. bowl, ounce, gram)	<input type="checkbox"/> <sub>2</sub>
b. Stipulation of the amount of <b>vegetables</b> provided by the lunch box every day	<input type="checkbox"/> <sub>1</sub>	Supply a daily minimum of: _____ (Please specify the measuring unit, e.g. bowl, ounce, gram)	<input type="checkbox"/> <sub>2</sub>
c. Stipulation of the amount of <b>meat, fish, poultry, eggs and legumes</b> provided by the lunch box every day	<input type="checkbox"/> <sub>1</sub>	Supply a daily minimum of: _____ (Please specify the measuring unit, e.g. bowl, ounce, gram)	<input type="checkbox"/> <sub>2</sub>
d. Limits on the frequency of using <b>processed or preserved meat</b> (e.g. sausage) in the lunch box per week	<input type="checkbox"/> <sub>1</sub>	Maximum no. of times per week: _____	<input type="checkbox"/> <sub>2</sub>
e. Limits on the frequency of using <b>deep-fried food</b> (e.g. fried chicken wings, fried pork chop) as the main dish of the lunch box per week	<input type="checkbox"/> <sub>1</sub>	Maximum no. of times per week: _____	<input type="checkbox"/> <sub>2</sub>
f. Stipulation of the frequency of serving <b>fruits</b> alongside lunch per week	<input type="checkbox"/> <sub>1</sub>	Maximum no. of times per week: _____	<input type="checkbox"/> <sub>2</sub>

## D. Facilities

9. Does your school provide **drinking fountains** for students to use free of charge?

☐<sub>1</sub> Yes      ☐<sub>2</sub> No

## E. Tuck shop

10. Is there a tuck shop in your school?

☐<sub>1</sub> No      ⇒ Please go to Section (F)

☐<sub>2</sub> Yes\*

\* Please supply a list of food and beverages that are offered by the tuck shop and a price list, indicating the three most popular items in the past week (Please refer to Appendix 3 for details).

11. Who is operating the tuck shop in your school?

☐<sub>1</sub> School staff

☐<sub>2</sub> Contractor (Name of contractor: \_\_\_\_\_)

☐<sub>3</sub> Others (Please specify: \_\_\_\_\_)

12. **(You may choose more than one option in this question)** When does your school open the tuck shop for students to buy food or beverages?

☐<sub>1</sub> Before class

☐<sub>2</sub> Recess time

☐<sub>3</sub> Lunch

☐<sub>4</sub> After school

13. Does your school **request** the **tuck shop** to sell more of the following food or beverages?

	Yes	No
a. Vegetables (e.g. boiled corn, salad)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
b. Fresh fruits	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
c. Fruit juice or dried fruits	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
d. Others (Please specify):		

14. Does your school **restrict** the sale of the following food or drinks at the **tuck shop**?

	Yes	If yes, please specify the details of the restrictions	No
a. <b>Drinks with added sugar</b> (e.g. carbonated drinks, lemon tea with added sugar)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub> Full ban <input type="checkbox"/> <sub>3</sub> Sale restricted to specific time slots <input type="checkbox"/> <sub>4</sub> Others (Please specify: _____)	<input type="checkbox"/> <sub>5</sub>
b. <b>Food high in sugar</b> (e.g. sweets, chocolate)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub> Full ban <input type="checkbox"/> <sub>3</sub> Sale restricted to specific time slots <input type="checkbox"/> <sub>4</sub> Others (Please specify: _____)	<input type="checkbox"/> <sub>5</sub>
c. <b>Food high in salt</b> (e.g. preserved fruits, cheese rings)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub> Full ban <input type="checkbox"/> <sub>3</sub> Sale restricted to specific time slots <input type="checkbox"/> <sub>4</sub> Others (Please specify: _____)	<input type="checkbox"/> <sub>5</sub>
d. <b>Food high in fat</b> (e.g. potato crisps, ice cream)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub> Full ban <input type="checkbox"/> <sub>3</sub> Sale restricted to specific time slots <input type="checkbox"/> <sub>4</sub> Others (Please specify: _____)	<input type="checkbox"/> <sub>5</sub>
e. Other specific restrictions on sale of food and beverages (Please specify):			

## F. Automatic vending machines of food or beverages

15. Are there any automatic vending machines of food or beverages in your school?

☐<sub>1</sub> No

⇒ End of Questionnaire. Thanks!

☐<sub>2</sub> Yes\*

\* Please supply a list of food and beverages that are offered by the vending machines and a price list, indicating the three most popular items in the past week (Please refer to Appendix 4 for details).

16. How many vending machines of food or beverages are there in your school?

☐<sub>1</sub> One

☐<sub>2</sub> Two

☐<sub>3</sub> Others, amount: \_\_\_\_\_

17. Do the **vending machines of food and beverages** in your school provide the following items for sale?

	Yes	No
a. Carbonated drinks	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
b. Pure fruit juice	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
c. Drinks with added sugar, in packets or bottles	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
d. Drinks and products of fresh milk and soya milk	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
e. Distilled water/mineral water	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
f. Fresh fruits	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
g. Ice cream/ice lolly	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
h. Sweets	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
i. Chocolate	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
j. Dried fruits (e.g. raisin, dried apricot)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
k. Crisps (e.g. French fries, prawn crackers)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
l. Bread/sandwiches	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
m. Processed or preserved meat (e.g. ham, sausage)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
n. Fried or deep-fried food (e.g. fried fish balls, fried chicken wings, fried rice rolls)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
o. Chewing gum/bubble gum	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
p. Vegetables (e.g. boiled corn, salad)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>
q. Others (Please specify):		

18. Does your school **restrict** the sale of the following food or drinks at the **vending machines of food or beverages**?

	Yes	If yes, please specify the details of the restrictions	No
a. <b>Drinks with added sugar</b> (e.g. carbonated drinks, lemon tea with added sugar)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub> Full ban <input type="checkbox"/> <sub>3</sub> Sale restricted to specific time slots <input type="checkbox"/> <sub>4</sub> Others (Please specify: _____) _____	<input type="checkbox"/> <sub>5</sub>
b. <b>Food high in sugar</b> (e.g. sweets, chocolate)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub> Full ban <input type="checkbox"/> <sub>3</sub> Sale restricted to specific time slots <input type="checkbox"/> <sub>4</sub> Others (Please specify: _____) _____	<input type="checkbox"/> <sub>5</sub>
c. <b>Food high in salt</b> (e.g. preserved fruits, cheese rings)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub> Full ban <input type="checkbox"/> <sub>3</sub> Sale restricted to specific time slots <input type="checkbox"/> <sub>4</sub> Others (Please specify: _____) _____	<input type="checkbox"/> <sub>5</sub>
d. <b>Food high in fat</b> (e.g. potato crisps, ice cream)	<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub> Full ban <input type="checkbox"/> <sub>3</sub> Sale restricted to specific time slots <input type="checkbox"/> <sub>4</sub> Others (Please specify: _____) _____	<input type="checkbox"/> <sub>5</sub>
e. Other specific restrictions on sale of food and beverages (Please specify):			

**✎ End of Questionnaire. Thank you! ✎**

Thank you very much for your valuable information. Please also supply (if applicable):

- (1) The menu, price list and quantity regarding the lunch ordered from the caterer in the past week;
- (2) The menu name and standardized recipe for the most popular lunch selection on each school day during the past week (solicit from the lunch caterer);
- (3) A list of food and beverages that are offered by the tuck shop and a price list, indicating the three most popular items in the past week;
- (4) A list of food and beverages that are offered by the vending machines and a price list, indicating the three most popular items in the past week.

**Appendix 1:**

**Sample record sheet for recording a one-week menu of school-provided lunch boxes, together with the prices and amount of order made by P4 and P5 students**

						Notes
<b>Choice (A)</b>						
Order price						
No. of order from P4 – P5 students						
<b>Choice (B)</b>						
Order price						
No. of order from P4 – P5 students						
<b>Choice (C)</b>						
Order price						
No. of order from P4 – P5 students						
<b>Choice (D)</b>						
Order price						
No. of order from P4 – P5 students						
<b>Remarks</b>						

Total number of P4 and P5 students subscribing school lunch boxes: \_\_\_\_\_

## Appendix 2

### Standardized recipe for lunch menu selections

Your school is requested to provide us with a list of the most popular daily lunch selections based on the lunch selections and quantity ordered during the past week, as well as to solicit standardized recipes for the lunch selections concerned from the lunch caterer. The information collected will help us to investigate the nutritional quality of the lunch provided to local students. If you have any questions, please contact our Dietitian, Ms Koo, at 2835-1092.

#### **Part 1 (Completed by the school)**

Name of school : \_\_\_\_\_

Contact person : \_\_\_\_\_

Date (Day/Month/Year)	The most selected lunch selection for the day	Any drinks or other food that comes alongside the set lunch (if applicable)
___/___/2006		
___/___/2006		
___/___/2006		
___/___/2006		
___/___/2006		

Note: If the lunch caterer provides only one daily set menu, please write down the name of that set menu.

#### **Part 2 (Completed by the lunch caterer)**

Name of lunch caterer: \_\_\_\_\_

Contact person: \_\_\_\_\_

Contact phone number: \_\_\_\_\_



Please provide a standardized recipe for each of the lunch selections listed above based on the ingredients used per lunch box. Please refer to our sample recipe (see attached) for details and note that each standardized recipe should include the following information:

1. Name of the lunch selection
2. All ingredients (please specify the form of the ingredients, i.e. fresh, canned or frozen), the amounts of the ingredients and units of measurement
3. All marinade and seasonings, the amounts of such and units of measurement
4. Brief description of preparation process (e.g. the process of frying, deep-frying, boiling)
5. The ingredients, amounts used, units of measurement and production process of any drinks or food that come with the set lunch (if applicable)
6. Nutrition facts (if any)

Remark: If any prepackaged food or drinks (e.g. beverages in packets, prepackaged dim sum) are used, please specify the weight or volume of the products and their main ingredients.

All information will be used for internal analysis by the Department of Health only and will be kept strictly confidential. Thank you very much for your cooperation!

### Sample standard recipe

Name of lunch selection: \_\_\_\_\_  
\_\_\_\_\_

#### (1) Ingredients need for each lunch box and preparation processes

Ingredients		Marinade or seasonings		Preparation processes
Name	Amount (unit)	Name	Amount (unit)	

**(2) Complimentary beverages or food for each lunch box (if applicable)**

Ingredients		Marinade or seasonings		Preparation processes
Name	Amount (unit)	Name	Amount (unit)	

**(3) Nutrition facts (if any)**

**As per lunch box and its complimentary beverages or food (if any) :**

Nutrient	Values	Nutrient	Values

**Appendix 3 Sample list for recording the food and beverages that are offered by the tuck shop and their prices, and a list of the three most popular items in the past week**

List of food available in the tuck shop

	<b>Name of food</b>	<b>Price</b>
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

- The three most popular food sold in the tuck shop in the past week

1 <sup>st</sup> :	
2 <sup>nd</sup> :	
3 <sup>rd</sup> :	

List of beverages available in the tuck shop

	<b>Name of beverage</b>	<b>Price</b>
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

- The three most popular beverages sold in the tuck shop in the past week:

1 <sup>st</sup> :	
2 <sup>nd</sup> :	
3 <sup>rd</sup> :	

**Appendix 4    Sample list for recording the food and beverages that are offered by the vending machines and their prices, and a list of the three most popular items in the past week**

List of food available at the vending machines

	Name of food	Price
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

- The three most popular food available at the vending machines in the past week

1 <sup>st</sup> :	
2 <sup>nd</sup> :	
3 <sup>rd</sup> :	

List of beverages available at the vending machines

	Name of beverage	Price
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

- The three most popular beverages available at the vending machines in the past week

1 <sup>st</sup> :	
2 <sup>nd</sup> :	
3 <sup>rd</sup> :	