

Nutrition education for adolescents: Principals' views

Principals' views of nutrition education (running title)

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ABSTRACT

This study aimed to examine school principals' perceptions of the school environment in Hong Kong as a context for the dissemination of food knowledge and inculcation of healthy eating habits. A questionnaire survey was administered in secondary schools in Hong Kong to survey Principals' views of students' food choices, operation of the school tuck shop, and promotion of healthy eating at school. Questionnaires were disseminated to all the secondary schools offering Home Economics (300 out of 466), and 188 schools responded, making up a response rate of 63%. Collected data were analyzed using SPSS. Most of the schools (82%) claimed to have a food policy to monitor the operation of the school canteen, and about half (52%) asserted there were insufficient resources to promote healthy eating at school. Principals (88%) generally considered it not acceptable for the school tuck shop to sell junk food; however, 45% thought that banning junk food at school would not help students develop good eating habits. Only 4% of the principals believed nutrition education influenced eating habits; whereas the majority (94%) felt that even with acquisition of food knowledge, students may not be able to put theory into practice. Cooking skills were considered important but principals (92%) considered transmission of cooking skills the responsibility of the students' families. Most of the principals (94%) believed that school-family collaboration is important in promoting healthy eating. Further efforts should be made to enhance the effectiveness of school food policies and to construct healthy school environments in secondary schools.

KEYWORDS : Adolescent Nutrition Sciences, diet, education, curriculum, Food Services

1 INTRODUCTION

2 Obesity is a global nutrition problem and is one of the major risk factors for the
3 development of chronic diseases.^{1,2,3,4} Studies have shown that the prevalence of chronic
4 diseases partly results from poor eating habits and low participation in physical exercise.^{1,5}
5 Changes in Hong Kong's diet in the past 20 years have led to a large increase in the
6 prevalence of coronary heart disease and other diet related diseases,^{6,7} and the problem is
7 becoming more common in the younger generation in recent years.⁸ Local studies revealed
8 increasing prevalence of unhealthy eating habits and behaviors such as frequent
9 consumption of unhealthy snacks and high energy foods, insufficient daily intake of fresh
10 fruits and vegetables, skipping breakfast, and dieting due to weight concerns among young
11 people.^{9,10,11,12} A recent study also evidenced these undesirable eating behaviors in the age
12 group of 11-15 years (junior secondary school students).¹³ Relevant studies suggest that
13 eating environments at schools should be partly responsible for the situation as the school
14 canteens deliver a considerable proportion of a student's total daily food intake.^{14,15} Such
15 undesirable phenomenon also suggests that the school nutrition curriculum may not be
16 effective or sufficient to help students make healthy food choices, and is consistent
17 worldwide.^{16,17,18,19}

18 There are other factors which influence young people's eating behaviors. For
19 example, the food environments provided by parents will shape children's food
20 preferences.^{20,21} In addition, mass media messages and exposure to television food
21 advertising,^{22, 23} peers and the social eating culture^{24, 25} are also significant factors. Previous
22 investigators have suggested that accurate and appropriate application of knowledge enables
23 informed choices to be made,²⁶ and the principals and staff members in schools should act
24 as role models for healthier eating and physical fitness.²⁷ Therefore the author wished to

1 investigate the attitudes of school principals in Hong Kong and the school environment as a
2 context to disseminate food knowledge and inculcate good eating habits.

3 The problem of over-nutrition has become evident in Hong Kong since early 1990.
4 Children were not only becoming obese, but also showed signs of high cholesterol level.²⁸
5 Since then, the Hong Kong Department of Health has been making continuous effort in
6 healthy eating promotion in the school environment. For instances, initiatives such as the
7 ‘Healthy Tuckshop Movement for Primary Schools’ have been implemented to promote
8 healthy snacking habits in primary schools;²⁹ and the territory wide “EatSmart@school.hk”
9 campaign was launched in 2006 to cultivate healthy eating practices in children.³⁰ However,
10 these and other programs mainly targeted primary students. The situation among the more
11 autonomous secondary students is less clear and requires investigation.

12 Ackermann³¹ argued that unhealthy foods and beverages sold in school canteens
13 may undermine the efforts of other healthy eating practices at schools. Therefore, a healthy
14 school environment is imperative to support classroom learning.³² The notion of the
15 ‘health-promoting school’ seeks to improve the health of children and adolescents using the
16 school as a site for interventions and activities.^{32,33} The Hong Kong Healthy Schools
17 Award Scheme implemented since 2001 by The Centre for Health Education and Health
18 Promotion of the Chinese University of Hong Kong and the Education and Manpower
19 Bureau (EMB) of the Government has been shown to be successful in improving students’
20 health through health intervention and education programs in participating schools.
21 Relevant courses for teachers and individuals are offered by the centre. Yet the healthy
22 School Award Scheme and the programmes offered by the Centre take a holistic approach
23 to Health Education, which includes areas such as mental and physical health,
24 environmental hygiene, personal health skills, and other youth risk behavior such as sex and
25 substance abuse, unhealthy eating is just among a variety of focuses concerning youth risk

behaviors. Apart from that, in the current year, among more than a thousand (1049) primary and secondary schools in Hong Kong,³⁴ only 117 (69 primary schools + 36 secondary schools + 12 special schools) have joined the Healthy School Award Scheme.³⁵ More schools need to be participants in the Scheme in order to have a greater impact.

In Hong Kong, food and nutrition topics were usually taught in the Home Economics (currently renamed Technology and Living) curriculum, and in some cases in the Liberal studies curriculum. Home Economics is offered in co-educational schools and girls' schools as a core subject at junior levels (secondary 1 to 3), and as an elective at senior levels. Whilst a common timeslot in the school timetable is shared by Home Economics and Design and Technology at junior levels, there is limited time to cover all the contents suggested in the Home Economics syllabus. As for Liberal studies, it is offered at advanced senior levels only and it became a core subject in the New Senior Curriculum only since 2009.³⁶ Complaint about the lack of explicit curriculum in nutrition is not specific to Hong Kong.³⁷ Whether food and nutrition topics are accessible to all students depends on how teachers value the importance of the topic as subject content, thus is often selected at the teachers' discretion.

In one of the few studies conducted in Hong Kong, 80% of a sample of secondary home economics teachers (n=180) felt that despite their utmost efforts, it is difficult to develop healthy eating habits in students through the food and nutrition curriculum alone.³⁸ Teachers asserted the influences of families, peers, the social eating culture and the media; and affirmed inadequate support in terms of time and resources provided by school as one of the major difficulties encountered, for instances, limited time allotted to nutrition curriculum and lacking of policies in management of school canteen and food provision. Teachers believed that there is a need for a greater focus on the school environment as a setting to promote healthy eating.³⁸ In this regard, it is perceived that there may be

differences in the extent to which school environments support or inhibit healthy eating practices. Usually the ultimate decision for activities conducted in schools and resource allocation lies with the principals, yet some school principals might have adopted food policies whilst others have not.

An Australian study by Maddock et al.³⁹ identified positive factors associated with food policies in schools, for instances, higher levels of satisfaction with school foods; integration of the school food services and curriculum; less reliance on outsourcing of food services and more reliance on internal resources like parent and student volunteers. Provision of food policy in schools have been associated with merits such as regulating the supply of food types; controlling the sales of high fat snacks and high sugar beverages sold via vending machines; and guaranteed food safety.⁴⁰ However, to date there have not been any studies of principals' views of food policies in relation to healthy eating in Hong Kong secondary schools. Therefore, this study was designed to:

- investigate the secondary school environment potential to promote healthy canteen
- foods and healthy eating practices;
- explore principals' views of the place of food and nutrition in the school curriculum and its effect on students eating habits; and
- examine principals' beliefs about the adoption of school food policies and health promotion initiatives.

It was hypothesized that nutrition education may not be an important priority for principals; and there may be difficulties perceived by principals in implementing an effective nutrition curriculum at school.

METHODOLOGY

To examine the school principals' perceptions of food policy issues in schools, a questionnaire survey was conducted in 2005.

Subjects and Instruments

The sample included principals of all the secondary schools in Hong Kong offering Home Economics as core study at junior secondary levels (secondary one to three, for adolescent aged between 11 and 15 years). The school list was obtained from the Field Experience Office of the Hong Kong Institute of Education. This office is responsible for the placement of student teachers for field experience in schools, and possesses up to date school database including subjects being offered. This made up a sample size of 300 principals (out of 466).

The design of the questionnaire was based on a literature review of related issues, and findings from the Teachers Survey which revealed difficulties encountered in the school environment as one of the influential factors over young people's eating habits.³⁸ Questions about the principals' perceptions and views of students' food choices and food provision practices in the school were included. The questionnaire was made up of 31 closed and open-ended questions which focused on the following areas:

- Demographic characteristics of the schools' student populations
- The principals' perceived control over the operation of the school canteen / tuck shop.
- The place of food and nutrition and cooking skills in the school curriculum.
- The principals' attitudes about students' eating habits.
- The principals' attitudes towards the promotion of healthy eating at school.

The draft questionnaire was carefully scrutinized to ensure construct validity, and eight academic staff members from the Hong Kong Institute of Education were invited to examine content validity. Changes were made to the questionnaire based on their feedback. Two principals were invited to pilot-test the questionnaire to check appropriateness of

1 response categories, the time taken to complete the questionnaire and to ensure its
2 comprehensibility.

3 **Procedure**

4 The questionnaires were sent to the principals in May 2005 by mail with
5 reply-paid envelopes and a cover letter explaining the purpose of the study and assuring
6 confidentiality and the right of the participants. The respondents were requested to return
7 the questionnaires within a four week period. Three hundred questionnaires were sent and
8 188 completed questionnaires were returned (a response rate of 63%).

9 **Data Analysis**

10 The data were analyzed using SPSS (Statistical Package for the Social Sciences,
11 12.0 for Windows). Frequency and contingency table analyses were used to examine the
12 study aims and hypotheses. The Principals were categorised into two groups according to
13 the presence or absence of a food provision policy at their schools. Cross tabulation
14 analyses (Chi square) were used to test for statistically significant differences between the
15 principals' responses to the individual items. An alpha level of 0.01 was set to determine
16 statistical significance.

17 **RESULTS**

18 **Location of schools**

19 In this sample, the majority (143, 86%) of the principals were from schools in
20 subsidized and private independent schemes; 14 (8%) of them were from government
21 schools and only ten (6%) were from aided or direct subsidy schools. Generally, the
22 distribution of schools in the various areas was in proportion to the total number of schools
23 located in each area in Hong Kong. That is, this sample was representative of the range of
24 schools in Hong Kong (Table 1).

25 **Food and nutrition in the school curriculum**

In the majority of schools (93%), food and nutrition was taught as part of the Home Economics curriculum. In about one third of these schools (37%), food and nutrition topics were also taught in Liberal Studies. In some cases (4%), these topics were dealt with through extra-curricular activities. Slightly more than half of the respondents (56%) believed that the nutrition curriculum in their schools adequately met students' needs. About half of them (48%) thought that their students had mastered skills in healthy food choices. However, about the same number (52%) thought that there were insufficient resources available in the school to help promote healthy eating. Health promotion activities were sometimes organized for students in about half (55%) of the surveyed schools. However, only a quarter of them organized these activities for parents.

Whilst the principals (92%) were overwhelmingly in favour of children learning cooking skills, most (92%) thought it was the family's responsibility to teach them. In their responses to an open-ended question about the importance of cooking skills, most principals indicated that cooking is an important life skill that is required for independent living. Some thought that cooking skills enhance healthy food choices and help students develop healthy eating habits; others believed that cooking nurtures the sense of responsibility in the family and minimize eating out.

Principals' perceptions of the factors which influence students' eating habits

Many principals (44%) considered the family to be an influential factor in students' eating habits. Peer and media influences were also regarded as influential by 25% and 20% respectively. Few principals (4%) believed that education is more influential over eating habits than other factors. The majority (94%) felt that even students who have acquired knowledge in food and nutrition may not practice healthy eating; and banning junk food from the school canteen would not help students to develop good eating habits. About half

of them (47%) thought the school environment has little influence on students' eating habits.

Principals' perceptions of the factors which impede school healthy eating education

The negative impact of media and food advertising was seen by most of the respondents (n=171, 91%) as a major negative influence which impedes healthy eating education at school. Inconsistencies between school and home practices were also considered by many principals (n=121, 64%) as hindering factors. Resource implications including shortage of teachers specialized in nutrition (n=70, 37%) and time availability (n=99, 53%) were also mentioned as perceived difficulties. Other limiting factors suggested by the respondents in the open ended question included limited resources such as lack of suitable teaching materials; negative impacts brought about by the social eating culture; the human desire for food enjoyment; and the belief that food choice is directed by one's lifestyle and personal values. Some respondents mentioned that schools should focus on the academic and moral aspects of education rather than on the development of healthy eating habits.

Principals' attitudes regarding food sold in the school canteen

Soft drink vending machines were available in the majority of schools in the sample (92%). Few of the respondents (8%) considered it appropriate for the school tuck shop to sell "junk" food. On the other hand, slightly more principals (45% agree 40% disagree) believed that banning junk food from the school tuck shop would not help students to develop good eating habits. While most of the respondents (98%) favored distilled and mineral water as options in the schools' vending machines, soft drinks (85%), flavored drinks (90%) and sugar free drinks (93%) were also accepted by the majority. Only a minority of the respondents considered candies (21%) and chips (28%) unacceptable in vending machines.

Principals' control over the operation of the school canteen and provision of lunches to students

Canteen Committees had been set up in most of the schools (82%) in the sample to monitor the operation of the school canteen or tuck shop. Generally speaking, these committees were comprised of teachers, parents, students, and canteen managers. In a quarter of the schools, the principal was also a member of the committee. In two thirds of the schools (66%), the students' lunches were mostly provided by lunch box caterers. Some students ate out for lunch (20%) but eight percent bought their lunch from the school canteen or brought packed lunch from home (4%). The rest (2%) of the principals were not sure about the source of lunches eaten by their students. Slightly more than half of the schools (58%) in the sample had devised lunch policies to monitor relevant lunch issues in the school. Yet the majority of the schools (93%) in the sample were involved in selection of lunch options from the menus provided by the lunch box supplier. Examples of the strategies employed are summarized in Table 2.

Comparison of Principals' beliefs between schools with and without a food policy

Regarding attitudes towards healthy eating practices at schools, no significant differences were observed between the principals from schools with a food policy and those without a food policy (Table 3).

DISCUSSION AND RECOMMENDATIONS

Whilst half of the principals in the sample believed that the nutrition curriculum in their school adequately met students' needs and that their students could master the skills required to make healthy food choices; as many also asserted there were insufficient resources to implement school-based nutrition and healthy eating programmes. Insufficient time and lack of teachers specialized in food and nutrition were among the difficulties mentioned. However, in practice the allocation of resources is often balanced between

1 different areas within the school curriculum. Whether healthy eating programs could be
2 allotted adequate time and resources depends on how the principal values the importance of
3 nutrition education. Their decisions may also be influenced by parents' preferences.
4 Chinese parents generally expect their children to excel in academic subjects. This has
5 partly brought about a school curriculum which is extremely academically oriented.⁴¹

6 Lee has argued that student health programs are not accorded a very high priority in
7 Hong Kong schools. Health-related topics are not recognized as 'academic' subjects, and so
8 may be considered to be less important than academic subjects. Hence, in a congested time
9 table they tend to be given less time.⁴² Principals may have to use resources more creatively
10 in order to strike a balance between the 'academic' and 'life skills' areas in the curriculum.
11 Overseas studies argued that a general population-based approach with regard to managing
12 and controlling obesity was considered more feasible and economical,⁴³ yet addressing the
13 issue at an earlier stage through nutrition education, when children and young people are
14 forming lifestyle habits may be less expensive and more effective.⁴⁴ The government may
15 need to allocate more resources to health subjects and relevant activities, if long-lasting
16 healthy eating habits are to be developed in the young generation.

17 Previous studies suggest that cooking skills do not occupy a pre-eminent place in
18 modern health promotion practice; and are often marginalized in the school curriculum,^{45, 46}
19 despite the recognition that lack of familiarity with food and lack of food preparation skills
20 are among the barriers to the consumption of a healthy diet.⁴⁷ In this regard, findings from
21 this study were consistent with those from previous studies. The majority of principals in
22 this study asserted cooking as an important life skill that is required for quality and
23 independent living for both boys and girls, yet as a component of the Food and Nutrition
24 curriculum, cooking has been allocated less time in the Hong Kong school curriculum in
25 recent years.⁴⁸ Although this study revealed principals' positive attitudes about cooking

1 skills, most of them believed that transmission of cooking skills should be the responsibility
2 of the students' families. A local study on perceptions of cooking skills suggested that
3 school should be an important setting for the acquisition of cooking skills as young peoples
4 in Hong Kong either rarely or never had any opportunities to cook with their parents,
5 though many of them cited parents as a major source of learning cooking skills.⁴⁹ While
6 current studies indicate that school cooking and eating programs play a significant role in
7 the development of healthful food choices,^{46,47,49,50} it is important that school principals in
8 Hong Kong be informed of this and provide students with adequate opportunities in the
9 school curriculum to learn cooking skills.

10 In accord with the views and findings from the literature, the principals in this
11 sample reported that their schools have to battle against the strong impact of media and food
12 marketing as well as the social eating culture.

13 Since they regarded media influences as important, it would be logical for them to
14 promote the consumer education elements in the school curriculum to ensure that students
15 are equipped with strategies to cope with food marketing.

16 The principals indicated that inconsistent approaches at school and at home and
17 insufficient school-home communication were barriers to healthy eating promotion.
18 However, only one in four of the surveyed schools sometimes organized healthy eating
19 promotion activities for parents, reasons being that schools generally find it difficult and
20 time-consuming to actively engage parents. In his effort to initiate Health Promotion
21 Schools in Hong Kong, Lee suggested that Parent Teacher Associations are an effective
22 channel for supporting school-based health promotion.⁴² Such practices are more common
23 in primary schools in Hong Kong, where parents are often keen to participate and the
24 children are more in their control of daily routines. However, this is not as easy with the
25 more independent and autonomous secondary students, so continuous efforts should be

made to establish home school collaboration, in particular at secondary schools. As indicated by the principals, peer support may also be an effective way to promote healthy eating initiatives among secondary students. This is another area which warrants further investigation.

The results of this study did not show significant differences between those schools with or without food policies (Table 3). This suggests that principals in schools with food policies might not hold more positive attitudes towards healthy eating than those in schools without policies. Indeed principals appeared to believe that the school environment and education have little influence on students' eating habits. Many of them thought that banning junk food from the school canteen would not help students to develop good eating habits. This may explain why soft drink vending machines were available in ninety percent of the schools surveyed. Overall the findings suggest that many of the principals were rather apathetic regarding the role of the school as a good model in healthy eating. More advocacy and education among principals about the importance of healthy eating promotion may be needed. They should be encouraged to put more efforts into the implementation of effective food provision policies.

IMPLICATIONS FOR SCHOOL HEALTH

Principals' apathetic attitude revealed a low awareness of the essential role played by school food and nutrition programs in the development of healthy food habits. Increased resources and funding support from the Government may encourage the principals to allocate more time and resources to food literacy programs at secondary schools through diverse subject areas and extra-curricular activities. While principals asserted cooking as an important life skill that is required for quality and independent living, they should value hands-on experiences of cooking as an important area in the food curriculum. Principals could also explore means to collaborate with parents, with a view to help students put food

theory acquired from school into everyday practice. Since school food policies appeared to be ineffective, the government should also consider mandating policies to enhance healthy eating environments in schools. To help young people develop life long healthy eating habits, further research should examine the influence of other factors influencing secondary school students' food choice, for example, peers, the mass media, and food marketing.

LIMITATIONS

The sample for this study included only principals of the secondary schools in Hong Kong offering Home Economics as core study (300 out of 466) at junior secondary levels. The schools not offering Home Economics (such as boys' schools) may have provided nutrition programs through other means in the curriculum. Therefore results may not be generalized to the secondary school population in Hong Kong at large.

CONCLUSION

Development of healthy school environments through the establishment of effective food policies and a sound food literacy program incorporating hands-on approaches to application of nutrition knowledge may be an effective way to help students develop life-long healthy eating habits. Nevertheless, to enhance successful implementation of school food and nutrition programs in secondary schools, secondary school principals' faith in the importance of nutrition education and a healthy school environment is imperative. They should not accept the status quo and inadvertently undermine the schools' role in the promotion of healthy eating.

HUMAN SUBJECTS APPROVAL STATEMENT

Ethics permission for this study was granted by the Deakin University Human Ethics Committee.

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Table 1 Location of participant schools in the sample

Location of School	Hong Kong		Kowloon		New Territories		Total	
Type of School	Island							
*n = 167	% (count) of sample schools / # <i>Actual number of schools in HKG</i>							
Government School	10 (3)	8	0 (0)	8	11 (11)	20	8 (14)	36
Subsidised /	84 (25)	60	90 (35)	100	85 (83)	212	86 (143)	372
Private Independent Scheme								
Aided /	6 (2)	12	10 (4)	26	4 (4)	20	6 (10)	58
Direct Subsidy Scheme								
Total	100 (30)	80	100 (39)	134	100 (98)	252	100(167)	466

*The total number of completed questionnaires is 188. This is the minimum number with the missing counts deducted.

#Source: <http:hkedcity.net> ³⁴

Table 2 Examples of lunch guidelines used by schools

Examples	n=188	Count
•Food provided for lunch must be nutritious; balanced diet; lunch box should contain more vegetable and less meat, more fibre, fruit should be provided		42
•Principal, Teachers, parents and students should be able to evaluate, contribute opinions and make decision on lunch box issues		38
•Use of seasonings should be minimized; no food additive should be added; use less oil; avoid deep frying method of cooking		17
•Monitor quality and quantity of lunch box; supervise lunch box caterers quality; school should involve in decision of menu		12
•Reasonable cost; options provided for students		8
•Beware of food hygiene; avoid high risk food such as sushi		5
•Lower form students required to take lunch at school (eating out not allowed)		5
•Avoid unhealthy ingredients and items such as sausages, ham. instant noodles and soft drinks		3

Table 3 Comparison of Principals' beliefs between schools with and without a food policy

Items	*n= 152 #With Policy	*n= 33 With no Policy	*n=185 All	chi-square and p-value	
Perception on Adequacy of students' food knowledge					
	% agree (% disagree)				
The nutrition curriculum in my school adequately meets students' needs.	57 (43)	52 (49)	56(44)	.361	NS
My students master skills in healthy food choices.	48 (52)	52 (49)	48 (52)	.157	NS
Even students have acquired knowledge in food and nutrition, they may not be able to practice healthy eating.	94 (6)	94 (6)	94 (6)	.395	NS
Attitude on factors influential to students' eating habits					
School has little influence on students' eating habits	50 (50)	33 (67)	47 (53)	2.911	NS
It is difficult to develop students' healthy eating habit through the school curriculum.	36 (64)	33 (67)	36 (64)	.112	NS
Banning junk food from the school canteen / tuck shop would not help students to develop good eating habits	45 (55)	46 (54)	45(55)	.509	NS
School-Family collaboration is important in promoting healthy eating.	94 (6)	91 (9)	94 (6)	.463	NS
Perception on cooking skill					
Cooking skill is important life skill.	93 (7)	88 (12)	92 (8)	.890	NS
Young people do not need to learn how to cook nowadays	6 (94)	3 (97)	5(95)	.434	NS
It is the family's responsibility to transmit cooking skills to the next generation	91 (9)	97 (3)	92 (8)	1.371	NS
Perception on selling of junk food at school canteen					
I think it is okay for the tuck shop to sell junk food such as soft drinks and chips	94 (6)	91 (9)	94 (6)	.463	NS
	% tolerable (% unacceptable)				
Potato chips are tolerable in vending machines in my school	74(26)	63 (37)	72 (29)	1.567	NS
	% yes (% no)				
Soft drink vending machines are available in my school	91 (9)	97 (3)	92 (8)	1.371	NS
School involvement regarding lunch provision					
My school has devised policies concerning lunch issues of students.	59 (41)	50 (50)	58 (42)	.885	NS
My school negotiates with lunch box caterers about the options provided to students.	95 (5)	87 (13)	94 (6)	3.011	NS
Initiatives in promoting healthy eating at school					
	% Always or Sometimes (% Rarely or Never)				
Healthy eating activities are organized for students in my school.	63 (37)	67 (33)	64 (36)	.126	NS
Relevant health promotion activities are organized for parents in my school.	31 (69)	15 (85)	28 (72)	3.266	NS

*These are the minimum numbers with the missing counts deducted

With a policy = school with a food policy; With no policy = schools without a food policy

NS= not significant