Published in final edited form as:
Int J Consum Stud. 2009 November ; 33(6): 669–675. doi:10.1111/j.1470-6431.2009.00795.x.

Cultural resistance to fast-food consumption? A study of youth in North Eastern Thailand

Sam-ang Seubsman[1], **Matthew Kelly**[2], **Pataraporn Yuthapornpinit**[3], and **Adrian Sleigh**[2]

[1]Thai Health-Risk Transition Project, School of Human Ecology, Sukhothai Thammathirat Open University, Nonthaburi, Thailand [2]National Centre for Epidemiology and Population Health, The Australian National University, Canberra, Australia [3]Research and Development Institute, Sukhothai Thammathirat Open University, Nonthaburi, Thailand

Abstract

Increased intake of saturated fat and refined sugars underlies much of the problem of emerging obesity all over the world. This includes middle-income countries like Thailand, which are subject to successful marketing of Western fast foods especially targeted at adolescents. In this study we explore the socio-cultural influences on fast-food intake for non-metropolitan (rural and urban) adolescents in North East Thailand (Isan). Our questionnaire sample included 634 persons aged 15–19 years who are in and out of formal schooling and who are randomly representing upper, central and lower Isan. All were asked about their knowledge of fast-food health risks and their attitudes towards, and consumption of, fast food and traditional food. As well, we used several focus groups to obtain qualitative data to complement the information derived from the questionnaire. Some three quarters of sampled youth were aware that fast food causes obesity and half knew of the link to heart disease. About half consumed fast food regularly, induced by the appeal of 'modern' lifestyles, social events and marketing, as well as by the convenience, speed and taste. Nearly two-thirds thought that local foods should be more popular and these beliefs were more likely to be found among children from educated and urban families. Local foods already constitute a cultural resistance to fast-food uptake. We propose several methods to boost this resistance and protect the youth of Thailand against fast food and its many adverse health consequences.

Keywords

Obesity; fast food; culture; Thailand; youth

Introduction

The dual forces of globalization and modernization are causing rapid worldwide changes in food supplies, food consumption behaviour and population health. One of the major changes over the last 50 years has been the development and marketing of Western-style fast foods. The fast-food revolution has especially affected children and adolescents. For example, despite high levels of awareness of the health risks, Scandinavian high school students reported that they frequently consumed fast food because of cultural pressures and addiction to the taste of fat and sugar (Mattsson and Helmersson, 2007). The US was the first country

Correspondence Sam-ang Seubsman, Room 101, Trisorn Building, Sukhothai Thammathirat Open University, Bangpood, Pakket, Nonthaburi 11120, Thailand. sam-ang.seubsman@anu.edu.au.

Europe PMC Funders Author Manuscripts

to experience the health consequences of fast food and now has the highest obesity rates in the industrialized world, affecting over half the adult population and a quarter of all children. Although the causes of this epidemic are complicated, the two lifestyle factors that changed most clearly in this period are food consumption behaviour and physical activity (Centres for Diseases Control and Prevention, 2008).

The food culture of any region or area is reflected in the health of the local population. For example, in the Mediterranean region it has been repeatedly shown that various traditional diets lead to lower rates of mortality, coronary heart disease and cancer (Trichopoulou *et al.*, 2003). Other research has attributed Japanese longevity to the traditional diet for that region (Matsuzaki, 1992). Reports from South and East Asia indicate that national diets in those regions are variously associated with lower rates of some forms of cancer (World Cancer Research Fund, 2007). Research conducted in Thailand by the Nutrition Institute at Mahidol University, and endorsed by the National Research Council, indicates that of many traditional Thai food recipes tested, 22 were found to be associated with lower rates of carcinogenic mutations in various biological testing systems (Kangsadalampai and Pratheepachitti, 2008; Kangsadalampai and Plaingam, 2008; Sukprasansap *et al.*, 2008). As well, Japanese researchers have reported that a wide variety of traditional Thai food ingredients, including lemon grass and galanga root, have powerful anti-tumour-promoting properties (Murakami *et al.*, 1994).

In many developing countries, including Thailand, problems of undernutrition receded in the 1990s and were soon replaced with new nutritional threats – overweight, obesity and related health problems (Kosulwat, 2002). By 2006, circulatory diseases were accounting for 18.6% of all deaths and had become a leading cause of death in Thailand (Wibulpolprasert, 2008). A major component of this trend was because of heart disease deaths, which had sharply increased from 49.5/100 000 of the population in 1989 to 69.2/100 000 in 1995. Rates have since fallen slightly – being overtaken by cancer, which is now the leading cause of death in Thailand – but remain worryingly high. Other diseases that increased in the Thai population included: diabetes, high blood pressure and high cholesterol, all of which are diet-related diseases (Wibulpolprasert, 2008).

In Thailand, high sugar consumption has been linked to diabetes and excessive sodium intake to high blood pressure and kidney failure (Wibulpolprasert, 2008). The overall increase in non-communicable disease in Thailand has been attributed to over-eating, eating foods with high fat and sugar levels, low exercise levels and high-stress lifestyles (Phothisiri, 2002). Another health problem Thailand is facing is increasing obesity rates. Among adults in Thailand the obesity rate [initially measured as body mass index (BMI) ≥ 30 kg/m^2] has risen from 2.2% of men and 3% of women in 1985, to 3.5% and 8.8% in 1997 and 5.2% and 9.8% in 2004. These figures grow more alarming if we add those classed as overweight (BMI between 25 and 30); this group made up 18.8% of men and 26.5% of women in 2004 (Aekplakorn *et al.*, 2004, 2007).

Thai food culture traditionally rested on a foundation of rice accompanied by vegetable dishes with the protein coming mostly from fish. This basic diet has been found to be relatively low in fat (Kosulwat, 2002). However, Thai food culture is changing rapidly. Surveys have shown that fat consumption in Thailand has increased sharply in the same period in which heart disease rates have been rising (Wibulpolprasert, 2008). Changes in the Thai diet have also included increasing sugar, wheat and animal protein consumption (Kosulwat, 2002). Over the period from 1983 to 2006, sugar consumption among Thais increased nearly three times from 12.7 to 33.2 kg per person per year.

Rapid changes in diet, with increasing consumption of oil, animal fats and protein, and decreasing consumption of vegetables and fruit, are factors influencing Thailand's obesity problems. Also linked to obesity is consumption of energy-dense foods, including many items usually classified as fast food (Kosulwat, 2002). Indeed, Western-style fast-food consumption has increasingly come to play a part in Thai food culture. Thailand's expenditure on such food increased by 40% in the period 1999–2005 (United States Department of Agriculture, 2008). This trend towards increasing fast-food consumption dates back some time (Yonniyom, 1987). Over a decade ago school children in urban Thailand indicated they liked fast-food restaurants because they are convenient and attractive places to meet with friends; and that advertising on TV, radio and billboards were influential motivators (Saowaphak, 1995).

Most studies so far have focused on Bangkok, possibly because this has been the entry point for fast-food penetration in Thailand. This study reports fast-food consumption behaviours and attitudes among young Thai people outside of Bangkok. We investigated fast-food health-risk knowledge and psychosocial and cultural factors limiting consumption of fast foods. We confined our study to the north-east or Isan region of Thailand because it is a culturally distinctive, geographically contiguous area where a large proportion of the Thai population resides. It is also the most economically disadvantaged region of Thailand and has a distinct food culture.

Methods

Study definitions

We adopted the following definitions for this study: (1) youth are persons aged 15–19 years old, studying formally or non-formally; (2) psychosocial factors are attitudes, thought patterns, beliefs or values held by society which may influence consumption activity; (3) food culture refers to Isan cultural ideas regarding food passed down through families and communities in local areas; (4) fast food means rapidly prepared meals in the Western style. These meals are ready to eat when purchased. The majority of these foods are energy-dense foods, which have high fat levels. For this study we are including hamburgers, cheeseburgers, sandwiches, deep-fried chicken, deep-fried potatoes/French fries, pizza and donuts. As fast-food consumption seems to be linked quite closely with soft-drink consumption, we also include soft drinks.

Sample population

We assess people aged between 15 and 19 years whether in school or not. The National Statistics Office estimated that in 2006 the youth population of Isan was 2 028 346, about half still in the formal school system. We chose one leading sub-regional province to represent each of the upper, lower and central zones of Isan, after ensuring that these provinces had a fast-food restaurant presence in their provincial capitals. The provinces chosen were Nakhon Ratchasima, Khon Kaen and Ubon Ratchathani. We then used purposive sampling to select one private school in the provincial capital and one government school located at least 20 km from the capital; within each sampled school we chose 50 individuals aged 15–19 years by simple random sampling. For individuals outside the formal school system we again used purposive sampling to identify areas both rural and urban, which had non-formal Youth Education Centres, approached these centres and with simple random sampling chose individuals to survey. To estimate the size of our sample we used the following formula (Yamane, 1967):

$$n=\frac{N}{1+N(\mathrm{e})^2}$$

where N = the total size of the population being sampled, e is the required precision level (0.05), and n = actual sample size needed to get reliable data. In this case it was 400 people. In our study we actually had six groups, that is, individuals from inside and outside the education system from each of three provinces. We chose at least 100 people from each of these six groups and in the end had a sample size of 634.

Research tools

A nine-page questionnaire was used to assess youth's knowledge, practices and feelings towards fast food, as well as their family upbringing and ideas on how to use local food cultures to adjust consumption behaviours. To develop the questionnaire we consulted experts in child behavioural psychology and academics from the Isan area to assess the face validity and suitability of our questions and adjusted the questionnaire accordingly. We then pre-tested questionnaires with young people with similar characteristics to the sample group and made any necessary revisions. Included were yes/no questions regarding knowledge of certain health effects of fast foods and questions with scaled answers regarding the frequency of eating certain fast foods as well as open questions where respondents could provide more expansive answers. This questionnaire was administered in paper format through the schools and Youth Education Centers. Responses were anonymous.

Focus groups were also conducted by persons familiar with local cultural patterns in order to probe deeper into young people's feelings in the same areas as the questionnaire described earlier. Overall, 11 focus group discussions were carried out with group sizes ranging from 5 to 12 people. In each group session one team member led the discussion while another kept notes to complement the recording. Later the recurring themes and key points for each focus group session were summarized in a written document.

Data analysis

Questionnaire data were analysed using SPSS software to calculate frequencies and to perform statistical tests. Focus groups were recorded and the information transcribed before examining the text for recurring themes and ideas. When assessing knowledge respondents had of the health effects of fast food, scores were calculated using the following scale: +1 (correct answer), 0 (don't know) and −1 (incorrect answer). Overall scores were based on the average value for a set of questions. Mean overall scores for subgroups were compared using t-tests to determine statistically significant differences. Comparisons were made between: males and females; those in the formal and informal education systems; urban and rural residents; those receiving higher (more than 37 baht per day) or lower study allowances; those who like and disliked fast foods; those who had a high (more than twice per month) or low consumption of fast foods; and those whose mothers and fathers had lower (up to primary schooling) or higher levels of education. Finally, we assembled a model predicting fast-food consumption using stepwise multiple linear regression. We progressively included all psychosocial variables that were found to be statistically significant ($P < 0.05$) predictors of fast-food consumption frequency. This model enabled us to quantify the contribution to increased fast-food consumption of the principle psychosocial determinants.

Europe PMC Funders Author Manuscripts

Results

Characteristics of the sample population

Our sample population of young people included 56.5% who were still studying formally and 43.5% from outside the formal school system (Table 1). Of the young people, 64.7% were female and 35.3% were male. The mean age of those surveyed was 16.8 years (±1.3 SD). The students on average received around 37 baht per day for daily expenses. Those in urban areas whether in or out of school had more spending money than their rural counterparts (45 baht vs. 28 baht).

Knowledge regarding health risks of eating fast foods

About three-quarters of respondents were aware of the high-calorie content of fast food and its link with obesity (Table 2). About half were aware of fast food as a risk for high blood pressure and high cholesterol, and just over one-third knew of the link to heart disease. Females had more accurate knowledge than males on every issue, but the differences were relatively small (Table 2).

Fast-food consumption behaviour and views regarding fast food

When analysing the consumption levels of different fast-food types and soft drinks we considered regular consumers to be those who consumed these products three to four times or more per week. Popular foods regularly eaten were deep-fried chicken and hot dogs, followed by sandwiches, donuts, hamburgers, French fries and pizza. Nearly two-thirds were regular soft-drink consumers (Table 3).

Overall, 52.8% of the young people surveyed stated that they enjoyed consuming fast foods. This figure was higher among those still studying formally, 54.5% compared with 50.7%. The remaining half of the population reported they did not like fast foods; the most common reasons given were that they had either never tried the fast foods in question or that they did not like the flavours of fast foods.

Feelings about local traditional foods

Overall nearly half (47.9%) of those surveyed reported that they felt pride in the unique qualities of their local food culture as part of their local identity (Table 4). Those who reported being indifferent to local foods, as they had been eating them all their life and considered them commonplace, made up 45.4% of the sample. Some 24.8% reported that if they did not eat local foods they felt that they were lacking something. Many people also reported that they felt that the popularity of local foods could help stop the trend towards fast-food consumption in Isan. This included 60.7% of young people – 57.4% of formal students and 64.4% of non-formal students.

A few more students from outside the formal school system reported that they felt something missing if they did not eat local foods. A feeling of pride in their ancestors for their ability to create these local foods was noted by nearly half the students in both groups. Non-formal students were more likely to report feeling bored with local foods.

Relations between socio-economic factors and fast-food knowledge

Socio-economic factors included were sex, educational status, frequency of eating fast foods and level of education of mother and father (measured as either lower – primary or secondary schooling only – or higher) (Table 5). The categories, which were found to have significant associations with less accurate fast-food health risk knowledge, were as follows: male sex ($P = 0.029$), not currently studying ($P = 0.023$), rural residence ($P = 0.001$),

receiving a lower daily money allowance ($P = 0.014$), less educated mother ($P = 0.006$) and father ($P < 0.001$), and consuming more fast foods ($P = 0.004$).

Relationship between psychosocial factors and increased fast-food consumption

We found three psychosocial factors that could be linked to increased consumption of fast foods. These were (italics for emphasis):

1. *Lifestyles* that value fast foods because they are modern.
2. *Social events* in fast-food restaurants – like birthdays or anniversaries, family celebrations, impressing a girlfriend/boyfriend or meeting friends.
3. *Marketing* that creates inducements to eat fast foods – including advertising about the place, products, price and promotions. Other inducements were convenient location, reasonably low prices, quick and efficient service, easily transportable food, good flavours, clean venues and giveaways or promotions available with meals. Television advertising was also appealing especially, during youth-oriented shows.

Predicting fast-food consumption behaviour

On stepwise multiple regression statistically significant predictors of fast-food consumption among Isan youth were (1) valuing fast-food restaurants for special social occasions and (2) being attracted by inducements of fast-food marketing. The social occasion factor accounted for 11.7% of increased consumption, marketing accounted for 13.7%. In contrast, fast-food consumption fell 12.9% among those with accurate knowledge of fast-food health risks.

Using traditional local food culture to reduce fast-food consumption

Responses to open questions on views on local foods allowed us to split the young people in our sample population into two groups, those who think traditional foods can help resist the spread of fast-food consumption and those who think fast foods will come to dominate as modernity advances.

The first group felt that traditional foods were easiest to find, were cheaper, could be found in shopping centres, were easy to make yourself, and were flavoured for Thais. Many in this group also believe that traditional foods are healthy because of their high vegetable content and extensive use of herbs, and so help in resisting obesity and in alleviating some diseases. The second group felt that fast-food consumption would not be limited by traditional foods because fast food is part of the dominating Western value system, is modern, convenient, hygienic, quicker, with novel flavours and promotions.

Outcomes of focus group discussions

The focus groups were conducted with 15–19 year olds of whom 80% were female. More than 90% reported that, given the opportunity, they would choose to eat traditional foods over fast foods, as they liked the taste better, and because it was cheaper and more filling. The majority was aware of the high-calorie nature of fast foods and felt that they were more suited to cold-climate countries than to Thailand, and that over-consumption of fast foods could lead to obesity, high blood pressure, diabetes and heart disease.

Sixty per cent of those interviewed consumed junk food or snack foods and soft drinks on a regular basis. They were aware these were foods without much nutritional value but they ate them as a form of entertainment that was hard to stop. Most of the group were also aware of the health benefits of eating vegetables and therefore valued eating them. The reasons, however, that young people still consumed fast foods despite being aware of their negative

impacts were convenience, speed, hygiene, easiness to eat (local foods are often eaten with the hands and are therefore messier), promotional giveaways, the foods made them feel modern and, lastly, because fast-food restaurants were seen as good places for young people to socialize.

When asked about their ideas regarding the ability of traditional foods to compete with fast foods, some interesting responses were given as follows: (1) that families needed to provide an example of good food choices and needed to educate children about the local food culture and encourage children to get involved in food preparation; (2) school canteens should include mostly traditional foods; (3) shopkeepers/restaurant owners should consider the flavours, appearance and presentation of traditional foods to make them more appealing; (4) young people themselves have to demand traditional foods and encourage their friends to eat with them; (5) relevant government agencies should organize events to promote local foods, such as a local food festival at a fancy hotel.

Discussion

This study has found that more than 50% of young people in North Eastern Thailand have accurate knowledge of the health risks of consuming energy-dense, high-animal-fat foods, including those we refer to as fast foods. They were aware that consuming these food types may lead to high blood pressure, heart disease, diabetes and high cholesterol. This means, however, that almost another 50% of young people lack a proper understanding of these issues, although the Thai Ministry of Public Health, as well as other relevant government agencies and private bodies have been campaigning to improve the level of knowledge among young people. These results are consistent with a study of values associated with food consumption in 10 Bangkok primary schools, which found that the young people were receiving the majority of their nutrients from high-fat products, snack foods and soft drinks (Nutrition Research Institute, 1998). When considering this lack of knowledge and understanding about fast foods among half the young people surveyed, we must also keep in mind that those most at risk of the negative health impacts are rural young people, as they displayed the lowest levels of knowledge of the health risks. These young people have a large amount of fast-food advertising directed at them, but are lacking the proper knowledge to make healthy eating decisions.

The other worrying factor we found through our survey was that more than half of the young people liked to eat fast foods and valued them. The findings we found especially worrying were the high consumption of soft drinks and hot dogs. The findings of this study agreed with other publications on this topic, which show overall caloric intake rising in Thailand over the last four decades, and the percentage of calories obtained from fat- and animal-based foods also rising (Kosulwat, 2002). This coincides with a massive increase in the rates of cardiovascular disease, cancer and diabetes, accompanied by rising obesity rates (Aekplakorn *et al.*, 2004, 2007; Wibulpolprasert, 2008). These diseases are all linked to eating foods that are high in fat (Phothisiri, 2002).

In both America and Thailand important factors influencing food consumption are convenience, speed, familiarity and advertising (Schlosser, 2001; Damapong, 2002). Sangaa Damapong (2002) noted that Thais follow fashion/trends in food consumption and lack knowledge of the connections between food and health. He concludes that the upward trend in fast- and junk-food consumption will have a big impact on Thai health.

We found that young Isan people whose parents were more highly educated were more likely to have a higher level of knowledge of the health risks of eating fast and junk foods. When mothers of young people had higher levels of education, the children showed a

statistically significant likelihood of eating less fast food. Mothers play an important role in influencing the eating behaviour of their children.

For Thai youth, education has a direct link to healthy eating behaviour and avoidance of unhealthy foods. People change their consumption behaviour towards healthier eating if they believe in what they are taught regarding the link between certain consumption patterns and diseases (Egger *et al.*, 1990). People may also hold beliefs or feelings that lead to higher fast-food consumption, such as valuing a modern diet that fits social occasions and that responds to marketing inducements.

Our findings from this study of Isan youth reinforce the evidence that beliefs and feelings can be used to combat the spread of fast foods into new areas. Healthy eating behaviours can be encouraged by fostering a feeling of pride in local food culture and by promoting the health benefits of these foods. Many local Isan dishes are low in fat and high in vegetable and herb content, thus providing health benefits, these include Som Tam, a papaya salad, Larb, a minced pork salad, and the sour vegetable- and herb-rich curries (Seubsman *et al.*, 2009). Isan youth least interested in eating fast foods had the most knowledge about those foods and the most interest in the value of local foods. But traditional local foods need to be made more appealing. This means making the packaging and restaurant presentation more attractive. Flavours of local foods could also be adjusted to make the food more appropriate to young people's tastes.

The information that has emerged in this study points to a widespread cultural resistance to fast food in North East Thailand. But the forces of globalization and modernity are undermining this resistance, and the emerging pattern of fast-food spread in Thailand reflects these cultural and marketing dynamics in play. This situation is a challenge for policy makers, public health officials, youth workers, and families throughout the world, but none more so than in middle-income transitional countries like Thailand. To take advantage of this potential to use cultural values to influence healthy eating behaviour, we propose the use of the education system to ensure that information on the risks of fast-food consumption reach rural youth and males outside the formal education system. Cooperation among families, schools and communities can be used to promote pride and identity between young people and local traditional foods, particularly through involving children in all stages of traditional meal preparation. The Ministries of Education and Public Health should also cooperate in supporting the aforementioned formal and non-formal school, family and community nutritional education and activities. Lastly, the Ministry of Public Health should conduct programmes with restaurant owners on healthy Thai food and its hygienic presentation and promotion, to enhance their ability to compete with fast-food restaurants. These ideas may be adaptable in other settings. It should be noted that the ideas for schools and communities derive from the quantitative and qualitative data gathered for this study.

Further research is also needed into the ways in which socio-cultural and other factors affect fast-food consumption in all regions of Thailand, especially among young people. Furthermore, the ways in which Thai food knowledge can be protected and preserved for the health of Thai people deserve more study, including analyses of how knowledge of this local food culture is culturally transmitted.

References

Aekplakorn W, Chaiyapong Y, Neal B, Chariyalertsak S, Kunanusont C, Phoolcharoen W, Suriyawongpaisal P. Prevalence and determinants of overweight and obesity in Thai adults: results of the Second National Health Examination survey. Journal of the Medical Association of Thailand. 2004; 87:685–693. [PubMed: 15279350]

Aekplakorn W, Hogan M, Chongsuvivatwong V, Tatsanavivat P, Chariyalertsak S, Boonthum A, Tiptaradol S, Lim S. Trends in obesity and associations with education and urban or rural residence in Thailand. Obesity. 2007; 15:3113–3121. [PubMed: 18198322]

Centres for Disease Control and Prevention. accessed on 16 October 2008Overweight and obesity. 2008[WWW document]. URL http://www.cdc.gov/nccdphp/dnpa/obesity/

Damapong S. Jap thong long jaan. Journal of Nutrition. 2002; 37:39–48. (Thai language).

Egger, G.; Spark, R.; Lawson, J. Health Promotion Strategies and Methods. McGraw Hill; Sydney, Australia: 1990.

Kangsadalampai, K.; Plaingam, W. Antimutagenicity of different Thai dishes against Nitrite Treated 1-Aminopyrene using Ames test. Presentation at The First National Conference on Toxicology; The Twin Towers Hotel, Bangkok, Thailand. November 17–18, 2008; 2008.

Kangsadalampai, K.; Pratheepachitti, N. Antimutagenicity of some Thai dishes on urethane induced somatic mutation and recombination in Drosophila melanogaster. Presentation at The First National Conference on Toxicology; The Twin Towers Hotel, Bangkok, Thailand. November 17–18, 2008; 2008.

Kosulwat V. The nutrition and health transition in Thailand. Public Health Nutrition. 2002; 5:183–189. [PubMed: 12027283]

Matsuzaki T. Longevity, diet, and nutrition in Japan: epidemiologic studies. Nutrition Review. 1992; 50:355–359.

Mattsson J, Helmersson H. Eating fast food: attitudes of high school students. International Journal of Consumer Studies. 2007; 31:117–121.

Murakami A, Ohigashi H, Koshimizu K. Possible anti-tumour promoting properties of traditional Thai food items and some of their active constituents. Asia Pacific Journal of Clinical Nutrition. 1994; 3:185–191.

Nutrition Research Institute. How to Care for Children to Prevent Them Being Overweight: A Guide for Mothers. Mahidol University; Bangkok, Thailand: 1998. (Thai language)

Phothisiri P. Food and nutrition: the heart of health preservation. Nutrition Journal. 2002; 37:14–22. (Thai language).

Saowaphak, N. Master of Mass Communications dissertation. Thurakit Banthit University; Bangkok, Thailand: 1995. The influence of marketing on the consumption of fast foods among young people in Bangkok.

Schlosser, E. Fast Food Nation: What the All American Meal Is Doing to the World. Penguin Press; London. UK: 2001.

Seubsman, S.; Dixon, J.; Pangsap, S.; Banwell, C. Thai meals. In: Meiselman, HL., editor. Meals in Science and Practice: Interdisciplinary Research and Business Applications. Woodhead Publishing; Cambridge, UK: 2009.

Sukprasansap, M.; Kangsadalampai, K.; Damso, K. Extract from Thai dishes inhibited the formation of mutagenes in gastric-liked solution in three nitrite treatment models. Presentation at The First National Conference on Toxicology; The Twin Towers Hotel, Bangkok, Thailand. November 17–18, 2008; 2008.

Trichopoulou A, Costacou T, Christina B, Trichopoulous D. Adherence to a Mediterranean diet and survival in a Greek population. New England Journal of Medicine. 2003; 348:2599–2608. [PubMed: 12826634]

United States Department of Agriculture. accessed on 26 June 2009Converging patterns in global food consumption and food delivery systems. 2008URL http://www.ers.usda.gov/AmberWaves/February08/Features/CovergingPatterns.htm

Wibulpolprasert, S. Thailand Health Profile 2005–2007. Bureau of Policy and Strategy, Ministry of Public Health; Bangkok, Thailand: 2008.

World Cancer Research Fund. accessed on 26 June 2009Food, nutrition, physical activity and the prevention of cancer. 2007:191.URL http://www.dietandcancerreport.org/

Yamane, T. Statistics: An Introductory Analysis. Harper and Row; New York, USA: 1967.

Yonniyom, R. Master of Business Administration Dissertation. Chulalongkorn University; Bangkok, Thailand: 1987. Attitudes of students which influence the fast food consumption in Bangkok.

Europe PMC Funders Author Manuscripts

Table 1

Characteristics of the sample population

Characteristics	Mean value (±SD)	Number (*n* = 634)	Percentage
Site of study			
School in urban area		175	27.6
School in rural area		183	28.9
Informal school in urban area		142	22.4
Informal school in rural area		134	21.1
Sex			
Female		410	64.7
Male		224	35.3
Age (years)			
14		11	1.7
15		122	19.3
16		121	19.1
17		169	26.7
18		143	22.6
19		67	10.6
Average age (years)	16.81 (±1.3)		
Average daily allowance (baht)	36.99 (±31.33)		
Urban formal school students	45.57 (±34.45)		
Rural formal school students	27.50 (±13.83)		
Informal education in urban areas	43.10 (±38.90)		
Informal education in rural areas	29.58 (±19.10)		

Europe PMC Funders Author Manuscripts

Table 2

Accurate knowledge of female and male youth regarding the health risks of fast foods

	Combined		Males		Females	
Knowledge regarding fast foods	**Number**	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**
Fast foods are high calorie	470	74.1	162	72.3	308	75.1
Eating fast foods increases the risk of high cholesterol	297	47.4	75	34.1	222	54.7
Eating fast foods increases the risk of becoming obese	493	77.8	170	75.9	323	78.8
Eating fast foods increases risk of high blood pressure	344	54.4	118	52.9	226	55.3
Fast foods are energy dense	312	49.2	106	47.3	206	50.2
Eating fast foods increases the risk of heart disease	238	38.7	79	36.4	159	39.9

Europe PMC Funders Author Manuscripts

Table 3

Frequency of eating various types of fast foods in the last month

	Every day or 3–4 times per week		Once or twice per week		Once or twice a month		Never tried	
Type of fast food	**Number**	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**
Deep-fried chicken	305	48.1	276	43.5	151	23.8	42	6.6
Hamburger	100	15.8	89	14.0	210	33.1	267	42.1
Donut	139	21.9	126	19.9	228	36.4	157	24.8
Sandwich	221	34.9	173	27.3	173	27.3	95	15.0
Hot dog	259	40.9	195	30.8	147	23.2	63	9.9
French fries	92	14.5	81	12.8	229	36.1	234	36.9
Pizza	57	9.0	46	7.3	280	44.2	241	38.0
Soft drinks	405	63.9	174	27.4	48	7.6	25	3.9

Europe PMC Funders Author Manuscripts

Table 4

Feelings regarding traditional local foods amongst the sample population

	All young people		Formal students		Informal students	
Feelings towards local traditional foods	**Number**	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**
Feel indifferent as it is common food eaten regularly	291	45.9	173	42.1	109	54.0
Feel local food is boring and seek new flavours	64	10.1	34	8.3	28	13.9
If don′t eat local foods feel something is missing	157	24.8	97	23.6	54	26.7
Feel pride in the unique qualities of their local culture	304	47.9	205	49.9	91	45.0
Admire talent of ancestors in inventing the local cuisine	136	21.5	88	21.4	44	21.8
Feel local foods can stem the tide of fast-food consumption	376	59.3	207	57.8	169	61.2
Feel local foods can stem the tide of fast-food consumption – males only	126	56.3	60	52.6	66	60.0
Feel local foods can stem the tide of fast-food consumption – females only	250	61.0	147	60.2	103	62.0

Europe PMC Funders Author Manuscripts

Table 5

Relationship between socio-economic factors and knowledge of the health risks of fast foods

Knowledge of health risks		Number	Mean knowledge score[a]	Statistical significance	
				t-test	*P*-value
Sex	Female	409	0.33 ± 0.32	2.18	0.029
	Male	223	0.28 ± 0.30		
Education	Formal	356	0.34 ± 0.32	2.28	0.023
	Informal	276	0.28 ± 0.28		
Residence	Urban	316	0.35 ± 0.32	3.38	0.001
	Rural	316	0.27 ± 0.30		
Study allowance	Higher	258	0.35 ± 0.31	2.45	0.014
	Lower	369	0.29 ± 0.31		
Attitude towards fast food	Like	334	0.32 ± 0.32	0.56	0.571
	Dislike	298	0.30 ± 0.30		
Frequency of fast-food consumption	Low	355	0.34 ± 0.29	2.95	0.004
	High	264	0.27 ± 0.33		
Father′s education	Lower	443	0.28 ± 0.32	3.93	0.000
	Higher	124	0.40 ± 0.29		
Mother′s education	Lower	487	0.29 ± 0.32	2.77	0.006
	Higher	83	0.40 ± 0.29		

[a]Knowledge score calculated by averaging scores for answers (correct = 1, don′t know = 0, incorrect = −1).