

# CHAPTER I



## INTRODUCTION

### 1.1 Background

Poor eating habits coupled with sedentary lifestyle or lack of physical activity are risks for overweight and obesity. The vicious cycle of physical inactivity and obesity poses a greater problem -- lack of exercise contributes to weight gain, and obesity makes it hard to exercise vigorously.

Overweight has become a significant health concern worldwide. The World Health Organization (WHO) estimates that over 1 billion people around the world are now overweight or obese. Lately, attention was focused to the alarming increase in prevalence of overweight in children and the fast upsurge in diet-related health conditions. Obesity has reached epidemic proportions globally, and data indicate that the situation is envisaged to worsen. The prevalence of overweight and obesity in high and soaring in developed regions such as Europe, the United States of America, and in Australasia, but in some developing countries the situation is even more severe with an estimated 115 million people suffering from obesity-related problems (WHO, 2003).

Concurrent with the high rates of obesity, the incidences of chronic non-communicable diseases such as diabetes mellitus, cardiovascular disease, hypertension and stroke, and some forms of cancer are also escalating and this increase are expected to continue. Already, the trends show that the world will see a shift towards longer life spans with a co-existing increase in the prevalence of chronic diseases. With this

transition, the future will face a serious burden as demands for health care and support services for those with chronic diseases increase.

International development has brought rapid changes in diets and lifestyles, which impact the nutritional status of populations. There are positive outcomes to development including better living standards and better access to services. However, there have also been considerable negative consequences in terms of inappropriate dietary patterns and decreased physical activities, and a parallel increase in nutritional and diet-related diseases. Diet-related diseases are becoming significant causes of disability and premature death in both developing and newly developed countries. These have placed additional burdens on societies (World Health Organization (WHO), 2003).

In the review of the literature, Schneider (2000) shows that malnutrition remains a significant problem for adolescents, worldwide, but that the types of nutritional problems impacting this group have changed significantly over the past two decades. In more affluent countries, the prevalence of obesity among adolescents is growing. This is mainly due to changes into lipid-rich diet and the lack of physical activity, especially among urban adolescents.

Children and young people face complex and frightening health challenges (WHO, 2001). Behavior-related problems are increasingly escalating, prompting health planners to take action. The health of children and young people is significantly related to the health-related behaviors they learn and choose to take on in their lifetime. Particular behaviors, which are often established during childhood and are extended into adulthood, can cause serious health problems for them, both today and later in life. Ultimately, these harmful behaviors can lead to the development of chronic health

problems. Similarly, healthy eating habits adopted in childhood may facilitate healthier eating habits in adulthood (Anderson et al, 2001). Children often lack the knowledge and experience necessary to make adequate judgments and may adopt poor diets. In addition, children of today have more freedom to choose what they want including the foods they eat. In the review of the literature, Anderson states that societal changes are also key factors that contribute to poor eating habits.

Although Asia still has the largest number of malnourished children in the world, over-nutrition is rapidly creeping some strata of the society. In many developing countries like Thailand, under-nutrition usually affects poverty-stricken rural areas. But in urban areas, due to the change in lifestyle and food habits, over-nutrition is sprouting. Many countries in Asia face the problem of having to deal with the over-nutrition and under-nutrition simultaneously. As a result, their health systems are under enormous strain (Haddad & Gillespie, 2002).

The diets of most children of today are changing. This is of concern because poor eating habits in young children may impair their growth and development and serve as the foundation for poor eating behaviors as adults. Such eating behaviors, as well as inactivity are important factors in the prevalence of overweight among children over the last ten years. Recent data reveal that 13 percent of American children 6 - 11 years old is overweight, compared with just four percent in the 1960's. In Malaysia, a 1996 survey revealed that 16.6% of Malaysian were overweight, and up to 4.4% reached the level of obesity, while 25.2% were reported to be underweight.

There are multiple interacting factors impact eating behaviors and ultimately nutrient intake. These include individual (personal) factors such as physiological or

biological factors, lifestyle factors, and knowledge, attitudes, and beliefs. Another factor is the environment, which includes parental influences and the mass media.

Understanding the eating behaviors of school age children and developing effective interventions to improve their nutritional status have been a challenge. The International Conference on Health promotion in 1991 paved the way to bringing health into settings of everyday life. The school was seen as one vital setting for health promotion. The school is a learning center and has the capacity to respond to the needs of children and to take both education and health beyond the classroom, to families and communities (WHO, 2001).

Olson (2001) articulates that in the last 10 to 15 years, nutrition has become a major component of health promotion and chronic disease prevention. Two widely recommended strategies for incorporating nutrition education directed toward children and youth into health promotion and disease prevention efforts are school-based nutrition education and the integration of nutritional care into health care. School-based nutrition education programs targeted toward very specific eating behaviors are showing very promising results in regard to behavior and attitude change of children and adolescents. Health promotion in schools is vital to enable children to make informed choices and establish healthy lifestyles--health programs to reduce health risk behaviors and promote good health among children.

In 1995, WHO launched the Global Health Initiative intended to mobilize and strengthen health promotion and education activities at all levels: local, national, regional and global. The programme is designed to improve the health of students, school personnel, families and other members of the community. Participating countries have positively received the concept of Health-Promoting Schools. Most

countries adapted and incorporated the plan in their national health strategies. However, the plan is integrated within the government system; [only] public schools were targeted for the programme. In Thailand for example, private schools, including international schools, are not mandated to execute the programme. In fact, private schools are not required to have a school health programme.

The school health initiative was conceived through the Ottawa Charter for Health Promotion in 1986. In 1995, the WHO Expert Committee developed guidelines and recommendations on Comprehensive School Health Education and Promotion. Countries like the United States, Australia, Canada and some European countries have adopted this action plan into their country context and developed national policies and strategies for the initiation and implementation of health programs in their schools. Thailand has also embraced this health promoting school concept.

In spite of the large investments placed on school health, statistics show us that eating behaviors among young children continue to be poor and diet-related health problems are escalating at an alarming pace.

More and more people are concerned about nutrition and are aware that achieving a healthful diet is important for health. However, despite this awareness, many have ignored to improve their diet.

## **1.2 Statement of the problem**

Studies from countries in North America, Europe, and some countries in Asia including Singapore, Malaysia, India, the Philippines, etc., reveal that overweight and obesity are alarmingly on the rise particularly among children and adolescents. Although it is generally determined that personal and environmental factors are related

to dietary habits and physical activity among [school-age] children, few studies has been conducted to understand the impact of multiple factors in eating behavior and physical activity among adolescents. In addition, studies on interventions designed in reinforcing healthy eating habits in the school setting are also lacking. This study was conducted to understand eating behavior and physical activity patterns among adolescents enrolled at an international school in Bangkok so that appropriate interventions to improve eating and physical activity behaviors can be developed.

International schools have long existed in Thailand since 1957. Originally, international schools catered to expatriates, providing education to all regardless of nationality, religion or ideology. Over the years, the number of international schools has increased. Today, there are about 34 International schools in Bangkok (Bangkok Guide 2003/2004).

Informal telephone interviews reveal that health education is not a part of the curriculum in the majority of international schools in Bangkok. However, most if not all provide basic health services including care of simple injuries, minor aches, fevers, and help students who are under medication comply with the regimen. Other than these problems, students are either sent home or in an emergency, referred to hospitals.

According to the latest Bangkok Guide, the only requirement of international school by the Thai Ministry of Education is the teaching of Thai studies such as language and culture. School health program is not mandated.

Health promotion programs in Thai schools initiated during the mid 1990's but the extent of the program in private schools is not known. Curless and Burns (2003) conducted a study regarding health promotion efforts at international schools serving the education needs of expatriate communities abroad. International school staff in 93

countries completed a survey. The findings reveal that the level of whole-school approaches to health promotion in the participating international schools varied but tended to be low.

### **The American School of Bangkok (ASB)**

ASB is one of 34 international schools in Bangkok. The school caters to both Thai children as well as children of expatriate families living in Bangkok. The school was founded in 1983 as a kindergarten. Today, with two campuses (Sukhumvit and Bangna), the school serves students from pre-kindergarten through high school. At the end of June 2003, ASB accommodated 559 students.

In 2000 ASB became a member of the East Asia Regional Committee of Overseas Schools (EARCOS) and received accreditation from the Western Association of Schools and Colleges (WASC). The school is comprised of more than 75 faculty members and administration personnel. Most of them are recruited from the United States, Great Britain, Canada, and Australia. The school has a student council that is being elected by the student body and the parent-teacher organization that is being elected by parents and teachers.

A nutritional screening conducted among 211 students at ASB Sukhumvit campus in August 2003 shows that 33.6% have weight problems with 5.7% underweight, 15.1% at risk of overweight and 12.8% overweight (Hegenauer, 2003). Refer to Table 1.1 for detail. The prevalence of overweight among ASB students is comparable with overweight among school age in other countries.

**Table 1.1 Nutritional status among ASB students grades 1-9**

Weight category	Number	Percentage
Underweight	12	5.7
Normal	140	66.4
At risk of overweight	32	15.2
Overweight	27	12.8
Total	211	100.0

(Source: Hegenauer, ASB Nutritional Screening, August 2003)

Although there is no data on the eating and physical activity behaviors among this group of students, projections suggest, based on the high prevalence of overweight among ASB students and on research findings from other countries, that eating and physical activity behaviors are relatively poor.

Although “health and healthy” are incorporated in the school objectives, in fact, health education is not part of the curriculum. Given the high proportion of students with weight problems, a school health promotion program is warranted.

Too much attention is given to teaching children to read, write, and understand other subjects. However, what is less obvious is the fact that problems we often do not associate with students and their families – for example, poor nutrition – which can adversely affect not only a child’s health, but also his or her ability to learn. Overweight and obesity are significant problems at ASB. Action has to be taken to block these problems from getting worse – to manage those with weight problems and to prevent other students from experiencing this problem in the future.

Nowadays, overweight and obesity are rapidly creeping into the society. Gone are the days when most children were suffering from under-nutrition and where being overweight is seen as a symbol of wealth and prosperity. Many children today consume unhealthy diets and receive minimal amounts of nutrition education at school. More and



more children are having trouble maintaining a proper body weight. According to the Asian Food Information Center (AFIC) (2002), in several Asian countries, one, out of ten children is now overweight. In some urban areas, the figure is one in five children. While overeating was originally blamed for weight problems, surveys among children in the U.S. suggest that energy intakes among most young groups have been the same over the last ten years. Research in both the U.S. and Canada reveals that physical activity has declined, with older children becoming less active (AFIC, 2003). If the problems of consuming unhealthy diets and inactivity are not curbed, these childhood behaviors will have such a profound impact on future adult lifestyle choices and consequences. It is obvious that obesity in childhood needs to be treated and prevented.

School-based education about nutrition and healthy lifestyles provides an opportunity for intervention with all children. The Ottawa Charter for Health Promotion is an initiative to allow people to take control over their health. The Charter also emphasizes the importance of going beyond healthy lifestyles to well being. It also called for the creation of health as well as preventing health problems. Being a venue where kids spend a vast majority of their time, the school becomes a powerful and influential means of reinforcing positive, healthy behaviors and to stress the relationship between good health and learning. The WHO Expert Committee provides three recommendations about what the school must do. First, the school must provide a safe learning and working environment for students and staff. Second, it must serve as an entry point for health promotion and a location for health intervention. Finally, it must enable children and adolescents to learn critical health and life skills.

A coordinated school health program has been identified as effective in improving eating behaviors among school age children. It is envisaged that the

experience and findings from this study will be applicable to other private, international schools in Thailand.

ASB caters to about 70 percent expatriate students and 30 percent Thai students. This research made it all the more valuable to carry out because it looked at eating behaviors of group of students from many different nationalities.

This study was a coordinated effort to develop a school health program to promote healthy eating habits and physical activity among students enrolled at ASB. Students from grades 4-6 were targeted and selected as initial group to be considered for intervention as a result of several considerations. Justification for selecting ASB as the study area were: 1) the school administration's willingness to be involved in the study, 2) the school has recently initiated setting up standards as an internationally recognized curriculum and 3) large expatriate student body.

The initiative calls for the development and/or strengthening of a school health policy, nutrition curriculum/instruction, physical activity, and food service. The initiative demanded partnerships between the school, students and parents. Its goal was to strengthen the capacity of everyone concerned to create an environment, which will encourage better knowledge, attitudes, and health promotion practices, and help to reduce risk factors for school age children. For the purpose of this study, the school health initiative was called "*Shape for Health*".

A substantial body of knowledge exists supporting the needs of children, as well as methods by which the school can provide effective health program in order to improve the health status of children. Concomitantly, there is a need to continue to experiment on various theoretical frameworks, methods and strategies and

documentation of the program process and effects. Moreover, further research can provide evidence of the importance of school as a health care venue for children.

According to the World Health Organization, education grants the ability to combine knowledge, attitudes, and skills and use them to shape one's life and that of others. Education can be said to be a prerequisite for health. Therefore, the extent to which schools can become vessels of health promotion for children and adolescents is fundamental in determining whether they will be both educated and healthy, and whether they can lead fulfilling lives and contribute to building a better world.

"Health For All", has strongly influenced many to promote health education and healthy lifestyle among the people. Children are building their bodies that are to last them a lifetime, therefore they must know that the food they eat has a direct relationship to the quality of their health. They must be informed of the dangers of unhealthy eating and what constitutes unhealthy foods. An intervention program among children is necessary to instill in them a positive attitude towards food.

This project aimed to promote healthful eating and physical activity behaviors of students in grades 4-6 and who are enrolled at the ASB. The study focused on nutrition education in young children, believing that children have much to learn about food and nutrition. Reaching children at this age is crucial. Moreover, nutrition education is essential because the quality of their nutrition has a direct impact on their growth and development as well as their nutritional status throughout life. This study carried out a situational analysis to collect socio-demographic data as well as nutrition-related knowledge, attitudes, beliefs, self-efficacy, eating and physical activity/inactivity behavior among the students at ASB. This information was used develop and/or

strengthen interventions to improve health outcomes among these students through the “*Shape for Health*” program as an entry point.

The Precede-Proceed Model was used as the framework in planning, implementation and evaluation of the program. According to Green and Kreuter (1999), this model has been tested and applied in a number of health promotion programs. Health promotion programs are applicable at any stages of prevention (primary, secondary, and tertiary). Health promotion intervention works as a plug to illness or injury, enhance health and enhance quality of life through modification or development of health-related behavior and conditions of living. The model is holistic as it includes various factors that determine health and quality of life. More importantly, the Precede-Proceed model provides a systematic series of steps and phases in planning, implementation and evaluation of the school health promotion program, for which this study was undertaken.

The importance of partnership between the school and parents in the success of the school health program was considered in the development of the program. The involvement of all school constituents including school administration, school personnel, school food service staff, students and parents, is a prerequisite for instituting the school nutrition program; a critical element for the program to succeed.

Although limited numbers of studies are available yet, the evidence to support the health-promoting school initiative is promising. A number of countries like the United States (US), Canada, United Kingdom (UK) and Australia have all documented positive results.

### **1.3 Purpose of the Study**

Data from a nutritional screening conducted in August 2003 by Hegenauer revealed that the prevalence of overweight was significantly high among ASB students. Based on literature review, it was implicit that overweight was due to poor eating behavior and sedentary lifestyle among the students. A coordinated school health promotion program has been identified as a strategy to improve eating and physical activity behaviors among these students. To develop and successfully implement a school health promotion model in a private international school, it was necessary to investigate various factors that influence students' nutritional status including personal and environmental. Findings from these assessments were utilized to guide in the development and implementation of the "Shape-for-Health" program at ASB. It is envisaged that experiences and results from this study will be applicable for program expansion within ASB and to other private international schools in Thailand.

The research questions that were addressed in this study are the following:

1. What are the eating and physical activity/inactivity patterns of grades 4-6 students at ASB?
2. What socio-demographic, psychosocial and environmental factors influence eating and physical activity/inactivity patterns among grades 4-6 students at ASB?
3. Do eating and physical activity/inactivity patterns influence nutritional status among grades 4-6 students at ASB?
4. Will the school health promotion program implemented at ASB effective in improving students' eating and physical activity behaviors?

## 1.4 Objectives of the Study

The goal of this study was to assess the effectiveness of the school health promotion initiative (Shape-for-Health) in improving eating behavior and physical activity among ASB students, through the application of health promoting school concepts in an international school setting in Bangkok. Following were the objectives of the study:

1. To determine eating and physical activity/inactivity patterns among grades 4-6 students at ASB.
2. To investigate associations between selected socio-demographic, psychosocial and environmental factors and eating and physical activity/inactivity patterns among ASB students.
3. To develop a coordinated school health promotion program at ASB.
4. To measure the effectiveness of the school health promotion program in improving eating and physical activity behaviors among the students.

## 1.5 Definition of Terms

This section provides definition of key terms and concepts that will help clarify their usage in this study.

Behavior is the action or practice pertaining to eating, physical activity and inactivity among the students.

**Food consumption or diet** pertains to food intake including type of foods/beverages, frequency and amount of consumption. Food consumption was based on number of servings per day of six major food components in the Food Guide Pyramid. Overall diet was based on component score. Each food component gets a

score of “1” for good intake and “0” for poor intake. In this study, students who score between 4-6 were considered with *good diet* whereas students who score between 0-3 were considered with *poor diet*. Three food frequency questionnaires were used to assess food consumption or diet.

**Restaurant food/fast food** is any food that is prepared outside of home and ready-made convenient food purchased from stores. This was measured by asking students the number of meals they eat at home and types of food they commonly eat.

**Physical activity** refers to activities performed and categorized as low, moderate and high. This was assessed by a questionnaire using number of minutes per day and times per week. Physical activity was classified into two categories: <30 minutes/day 1-2 days/week (low) and >30 minutes/day 3-7 days/week (moderate-high). The term physical activity was more frequently used here because it sounds less intimidating to individuals who are inactive. However, the terms physical activity and exercise were [sometimes] used interchangeably in this study.

**Physical inactivity** refers to sedentary activities including TV-viewing and video/computer game use. This was assessed by asking students to estimate hours per day of time spent in each sedentary activity. The information was classified into  $\leq 4$  hours/day (low-moderate) and >4 hours/day (high). A score was based on total number of hours spent in sedentary activities.

**Knowledge** refers to nutrition-related construct to represent the cognitive processes related to receiving and/or understanding nutrition information. This was assessed by a 10-item knowledge test comprising 20 correct responses and used to measure knowledge before and after program intervention. Nutrition instruction was

used as the main means to improve nutrition knowledge among the students. Knowledge score was classified into  $\leq 10$  points (poor) and  $> 10$  points (good).

**Attitude** refers to the way students and parents view, think or feel about healthful eating and physical activity.

**Beliefs** are statements or viewpoints; expressed or implied that is emotionally and/or intellectually accepted as true by a person or group, regarding eating and physical activity. It refers to the way the students and parents regard healthful eating and physical activity. Attitude and beliefs in this study were combined and a 20-item [5-point] scale was used to collect data on students' and parents' attitudes and beliefs regarding healthful eating and physical activity. Attitude and beliefs score was classified into  $\leq 50$  points (negative) and  $> 50$  points (positive).

**Self-efficacy** refers to the confidence of the students in her/his ability to engage successfully in a specific behavior. *Eating self-efficacy* refers to the self-assurance of the student in her/his ability to engage successfully in healthful eating. A 10-item [7-point] scale was used to collect data on self-efficacy. *Exercise self-efficacy* refers to the confidence of the student in her/his ability to engage successfully in physical activity or exercise. Likewise, a 10-item [7-point] scale was used to collect data on self-efficacy before and after program intervention. The score was classified into  $> 35$  points (poor) and  $\leq 35$  points (good).

**Access** refers types of recreation or exercise facility available to perform physical activity.

**Utilization** is the actual use of recreation or exercise facility.

In this study, **BMI** was used to classify weight status. BMI calculated as weight (kg) / height (cm) / height (cm) x 10,000, is commonly used to classify at risk of



overweight or overweight. The cutoff criteria are based on the 2000 CDC BMI-for-age-growth charts. In this study, weight status was classified into two categories: BMI-for-age  $\leq 85^{\text{th}}$  percentile (underweight and normal) and BMI-for-age  $> 85^{\text{th}}$  (at risk of overweight and overweight).

“**Shape-for-Health**” program refers to the school health promotion initiative developed and implemented among ASB students in grades 4-6 to enhance healthful eating and physical activity. *Shape* has two meanings: 1) altering or changing eating and physical activity behaviors through life skills development that will also lead to 2) change in body shape or weight. *Health* is the ultimate impact whereby students prevent diseases and chronic health conditions to occur. The program is depended upon the implementation of five major components including policy development, nutrition education, enhancement of physical activity, improvement of the school food service program and weight monitoring. *Nutrition policy* refers to a written strategy or guiding principles pertaining to nutrition in school. The plan incorporates four components: nutrition education, physical activity, food service and weight monitoring. *Nutrition education* refers to the curriculum and activities designed to provide instruction on the nutritional value of foods, physical activity and the relationship between food, physical activity and human health. *Physical activity enhancement* refers to improvement in physical activity performance through education. Instruction was deigned to foster the development of knowledge, attitudes, motor skills, behavioral skills and confidence needed to adopt and maintain a physically active lifestyle throughout the life cycle. *Food service program* refers to the food program of ASB including school lunch, snacks, foods and drinks sold and the system (cooking, serving, buying, selling, distribution, cleaning, etc.) that makes the program function effectively. *BMI*

*monitoring* refers to the regular examination of students' weight and height to obtain monthly BMI for the purpose of scrutinizing changes in their nutritional status.

## **1.6 Summary**

Chapter I provided an introduction and rationale for this study. The need to understand eating and physical activity behaviors among ASB students was discussed concomitantly with the lack of health program currently available. A comprehensive school health promotion program was suggested as the most appropriate means to enhance healthful eating and physical activity at ASB. The development of a school health promotion model was stated as the purpose of the study. The four research questions investigated were presented as well as key terms and concepts defined.