

## Original Article

# The diamond level health promoting schools (DLHPS) program for reduced child obesity in Thailand: lessons learned from interviews and focus groups

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Overweight and obesity prevalence among children is increasing globally. Health promoting school policy has been initiated in Thailand to tackle this problem. The schools that best conduct obesity management programs are rated as diamond level health promoting schools (DLHPS). However, the methods used by these schools and their efficacies have not been well-documented. This qualitative study aims to analyze the processes and activities used by four DLHPSs in obesity management programs. In-depth interviews were used to obtain information from school directors, teachers, and cooks, whereas focus group discussions were used for students. School-based obesity management programs have resulted from health promoting school policy and the increasing prevalence of overweight students. Teamwork has been a key strategy in program implementation. Policy diffusion and division of labor have been effected by school directors. A monitoring process is put in place to ensure program delivery. The most evident success factor in the present study has been intersectoral cooperation. Challenges have included confusion about the criteria in obtaining the DLHPS status, parental involvement, and students' resistance to consume vegetables and other healthy foods. From the student focus groups discussions, three activities were most valued: class health and nutrition learning; provision of healthy foods and drinks, together with removal of soft drinks and seasoning from the cafeteria; and exercise for health. Intersectoral cooperation is the key success factor for the operationality of DLHPS, especially in making healthy foods available and physical activity the norm, at school and home.

**Key Words:** child obesity, management strategy, health promoting school, intersectoral cooperation, healthy foods and exercise

## INTRODUCTION

Overweight and obesity have become the major health problem of all ages around the world. The global prevalence of overweight and obesity among children and adolescents has risen at an alarming rate.<sup>1</sup> During 1999-2007, the prevalence increased from 10.3% to 40.0%.<sup>2-6</sup> Overweight and obesity rates among Thai children aged 1-5, 6-11, and 12-14 years were 8.5%, 8.7%, and 11.9 %, respectively.<sup>7</sup> Eating behaviors among Thai children have drastically changed. Many now consume more fatty foods, high-caloric and sweetened foods.<sup>8</sup> Unhealthy foods<sup>8</sup> and sedentary behaviors<sup>9</sup> contribute to obesity in children.

Many methods of childhood obesity prevention have been used, but the outcomes are rarely sustainable.<sup>10,11</sup> Measures used in childhood obesity prevention and management included not only diet, exercise, and community participation, but also the implementation of the national health policy in making schools a place for health promotion, referred to as health promoting school (HPS) policy.<sup>12</sup> The HPS model can aid the development of healthy eating behaviors among students.<sup>13</sup> In response to the sharp rise in child obesity, several countries have passed legislation in support of HPS such as Australia, USA, and

France.<sup>14-18</sup>

So far, the most successful approaches to child obesity have been seen in the EPODE community-based studies in Europe, commencing in France.<sup>19</sup> The school is a part of the community and attention to it as an actor in obesity prevention and weight management is crucial. School food and activity environments are now recognized as determinants of growth and development in Asia and elsewhere.<sup>20</sup>

In Thailand, HPS has been promoted by the Ministry of Public Health to support health promotion. HPS consists of 10 elements for assessment and implementation: 1) school policy, 2) management in the school, 3) collaboration of school and community, 4) creating environments supportive of health, 5) school health services, 6) health

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education in school, 7) nutrition and safety of food at school, 8) exercise through sport and recreation, 9) provision of counseling and social support, and 10) health promotion for school staff. Two measures in particular, the promotion of healthy eating and exercise behaviors, have been adopted to reduce the problem of childhood obesity during the school years. Those schools that perform HPS well are to be given awards. The awards are classified into four levels: bronze (achieved more than or equal 4 criteria), silver (achieved more than or equal 6 criteria), gold (achieved more than or equal 8 criteria), and diamond. For the highest award (the diamond level) a school must qualify in 3 criteria with 19 indicators. Diamond level health promoting schools (DLHPS) focus on improving students' health by sustainable health promotion and strengthening weight control policy and programs.<sup>21</sup> Therefore, the obesity management programs of the DLHPS are the best models for other schools in controlling overweight and obesity in children.<sup>22</sup>

This study reviewed and analyzed the existing obesity management programs of DLHPS and documented lessons learned from these programs to craft guidelines in developing obesity management programs for other schools.

## METHODS

This study utilized qualitative research methods including in-depth interview and focus group discussion to enhance the understanding of the contextual experience of the obesity management programs in DLHPS.

### *Settings and participants*

Schools were purposively selected from 60 DLHPSs in 2010.<sup>21</sup> The criteria for selection of DLHPS and additional requirements were used as inclusion criteria for this study. The additional requirements were schools 1) located in Health Promotion Region 1-4 in central region of Thailand, 2) implementing obesity management programs for at least three consecutive years, 3) integrating nutrition content in health education and physical activity courses and in other courses, and 4) willingness to participate in the study. After reviewing the DLHPS document and the schools were contacted via telephone, 4 DLHPSs were included. Participants included four school directors, eight teachers, six cooks, and 36 students who previously participated in the school obesity management programs. Accordingly, 54 respondents participated in this study, and 100% participation rate. The participants must be able to read and write Thai language to understand and sign the informed consent form.

### *Procedure*

Ethical approved was obtained from the Research Ethics Committee, Faculty of Public Health, Mahidol University, Bangkok. Interview questions consisted of core questions which were common to all groups and specific questions crafted specifically for each group (Table 1). In-depth interviews with the school directors, teachers, and cooks were scheduled by the respective school directors. Focus group discussions were conducted with students to obtain their views on the programs. The guiding questions for focus group discussions with the students composed of

what activities do you participate in the program? What activities do you like best? And what activities do you think are most effective in helping you losing weight? The total number of focus group discussions included 36 students (8-10 students/school). The duration of time in interviews and focus group discussion was between 30-60 minutes. The time for data collection in all schools was 2 months.

### *In-depth interviews and focus group discussions analysis*

An audiotape was used in the interviews while a research assistant took field notes to collect information that could not be recorded by audio taping. The interviews were verbatim transcribed by the 3 researchers. Content analysis of the interviews were done by using the guidelines developed by Zhang and colleagues.<sup>23</sup> Categories and a coding scheme were done and were checked for clarity and consistency of category definitions.

For content analysis of focus group discussions used guidelines of Krueger and Casey.<sup>24</sup> The data were analyzed using the "Long Table Approach". First step was to write one of the focus group questions and answers to be analyzed on colored paper. Rearrangement for new categories occurred when data had new information (answer), and this process was repeated to generate appropriate categories. The final step was writing a summary of the answers for comparing, contrasting, and conclusion for each question.

## RESULTS

### *Characteristics of the participants*

The average ages (mean±SD) were 55.2±10.8, 39.0±9.6, and 38.5±9.7 years for the school directors, teachers, and cooks, respectively. The duration of the current positions of the school directors, teachers, and cooks were 17.7±13.0, 13.2±9.9, and 6.6±6.8 years, respectively. The duration of participating in HPS of the school directors, teachers, and cooks were 7.0±2.0, 5.2±2.0, and 5.2±2.0 years, respectively. The average age of the students was 10.7±1.1 years and most of them (44.4%) were in Grade 6 (12 years old).

### *Findings from interviews*

During the in-depth interview, participants were divided into three groups, school directors, teachers, and cooks. Seven issues emerged from the analysis.

#### **1: Initiation of the obesity management program in the schools**

The obesity management program in the schools was set out by the HPS policy. A school director said "This school had received the HPS award since 2004 according to the HPS policy." (School director A). Moreover, the number of overweight students was increasing which affected the student's health. Another school director said "The problem was the rate of obesity in children was about 17% which exceeded HPS's target of 7%. We were aware of the effects of obesity on children's health and decided to participate in HPS." (School director B).

#### **2: Process of the program management and activities**

It was found that all schools used the same process. The policy communication and division of labor were done by the school directors. All sectors were involved in the program initiation. School health teachers would monitor the implementation of all projects. One teacher said "One teacher was assigned to be responsible for one project and was supported by other teachers and team members." (Teacher B2).

### 3: Activities of obesity management program in DLHPSs

As to the types of activities in each school, several activities were carried out in the obesity management programs such as integrating information on weight control by providing worksheets that had the nutrition content of school food to students in all courses; parents and cooks were trained by the experts such as doctors, nurses, and nutritionists once a semester; the schools served healthy foods which included adequate amount of fruits and vegetables, low-sugar foods, and drinks, in the cafeteria. Students planted vegetables in school, which were consumed for their lunch meal. Students were encouraged to exercise at appropriate times such as aerobic dance in the morning and sports in the afternoon, after school, and at home. Health activity days were organized once a semester, and a health learning corner were implemented. The monitoring of nutritional status of the students was assessed twice a semester. The nutritional status was defined by growth chart of the Thai Ministry of Public Health: "childhood obesity" was defined as a child who has over 3 SDs above the median, "childhood overweight" was defined as a child who has 2 to 3 SDs above the median, "childhood at risk of overweight" was defined as a child who has 1.5 to 2 SDs above the median, and "childhood normal weight" was defined as a child who has between 1.5 above the median and 1.5 SDs below the median.<sup>21</sup>

Example of activities as quoted by the school directors and a cook "We had exercises every morning. The exercises would involve using shoulder, foot, and knee rota-

tion with music for about 5 minutes." (School director A). Another director said "We built the healthy corner similar to the exhibition and included information on obesity and healthy food in the school subjects for integration in all courses." (School director D). A cook said "We managed to make foods in cafeteria healthy according to the standard guidelines." (Cook C1).

Weight control activities of 4 DLHPSs were shown in Table 2.

### 4: Factors contributing to the success of the programs

All cooks agreed that the obesity management programs succeeded due mainly to the school directors and the cooperation of all parties "The first success factor was the school director. She had good ideas that benefited the school. In addition, the teachers, parents, and students were cooperative." (Cook B1). A school director quoted "This project succeeded due to parents, students and teachers. The reward did not belong me but to everyone." (School director C). After finishing the program, the number of obese children in school decreased to lower than 7%, as noted by a school director "The cooperation from all parties help to conduct the obesity management program and reduce the prevalence rate of overweight and obesity students from 15% to 7%. We were proud of this healthy activity." (School director B).

### 5: Obstacles of the programs

Problems and challenges were faced by all schools during the first phase of the program such as teachers' confusion about the requirements in attaining the DLHPS, and workload of the teachers. A school director said "Teachers and team members didn't understand the requirements for being DLHPS because this was new to us. We didn't know how to fill out the document for each criterion. I invited public health staff to explain the detailed process, and this problem was solved." (School director D). A school health teacher said "The additional workload was mainly due to too much paper work. I had to teach three hours per day. So, I didn't have time to work on the doc

**Table 1.** Guideline for in-depth interviews

#### Core questions for all groups

1. Who is responsible or who played a key role in the obesity management program in school?
2. What do you think are the success factors of the program?
3. What are the lessons learned and benefits from the program?
4. What are the obstacles in the implementation of the program? How do you overcome them?
5. Do you think the program will continue or stop in the future? If it continues, what will be added or changed? If it stops, why? How will you address them?

#### Specific questions for school directors

1. Please tell me, why did you initiate the obesity management program in your school?
2. Could you recount the process of the program?
3. What were the results of the program? Which activities continue to be implemented and who is responsible for these activities?

#### Specific questions for school directors and teachers

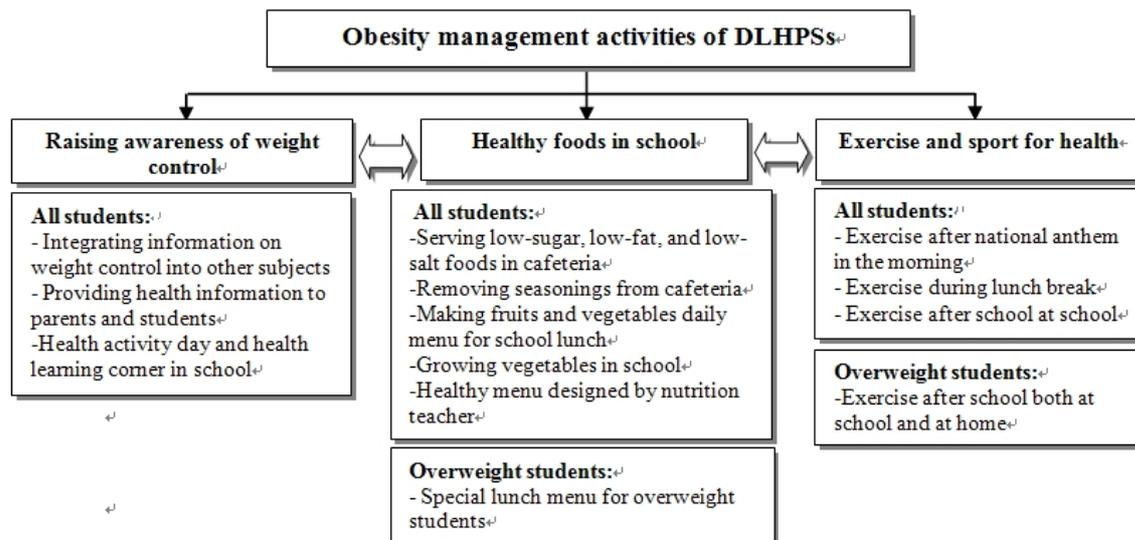
1. Who was involved in the project and activities? What are their roles? Are there any activities that cannot be continued and why?

#### Specific questions for teachers and cooks

1. Do the program activities cause you more work?
2. What changes do you discern after the implementation of the program (both of positive and negative nature)?
3. What are the opinions of the students and parents about this program?
4. What are the effects of the program on the school, teachers, parents and students?
5. What do you think are the most important achievements of program?

**Table 2.** Summary of the activities of DLHPSs A, B, C, and D

| DLHPS | Activities  |   |   |                    |   |  |
|-------|---|---|---|--------------------|---|--|
|       | Healthy food  | Exercise  | Nutrition education   | Growing vegetables | Providing information on health   | Recording  |
| A     | -Low sweet beverage from herbs and fruits                               | -Exercise in the morning and lunch time                     | -In health education subject                                | -                  | -To parents by meeting one time/semester  | -Students' nutritional status  |
| B     | -Healthy food consumption for health in school                          | -Exercise in the morning                                    | -In health education subject                                | -In school         | -To parents and cooks by meeting one time/semester  | -Students' nutritional status<br>-Food intake and exercise behaviors |
| C     | -Healthy food for obese students<br>-The vegetables consumption project | -Exercise in the morning, after school (at school and home) | -In health education subject                                | -                  | -To parents and cooks by meeting one time/semester  | -Students' nutritional status  |
| D     | -The vegetables consumption project                                     | -Exercise in the morning and lunch time                     | -Integrating information on weight control into all courses | -In school         | -To parents by meeting one time/semester and newsletters<br>- To students by healthy corner | -Students' nutritional status  |



**Figure 1.** The activities of obesity management programs in 4 DLHPSs

uments.” (Teacher A2).

Moreover, some students refused to eat healthy foods and parents indulged their children as a school nutrition teacher said “At first, parents were not interested in the obesity problems due to children’s snacking behaviors. I invited health education experts to attend parents meeting every semester. Moreover, we sent newsletters to parents to disseminate information on obesity, weight control, and activities carried out in school.” (Teacher D1).

**6: Lessons learned from the programs**

Lessons learned from the programs not only the number of overweight and obese students decreasing but also the intersectoral cooperation and health improvement of students and teamwork were occurred throughout the program. As a school director said “The participation of all stakeholders included public health representatives from the province, district, and sub-district; teachers; and rep-

resentatives of community and parents.” (School director D). Moreover, a school health teacher said, “I had learned more about health and health behavior modification. Working for this project, I had the opportunity to have lunch with the students and I ate more vegetables.” (Teacher C2).

**7: The implementation of the program and activities in the future**

All school directors expressed their intentions to continue the programs in the future because these symbolized HPS. New activities were suggested to increase the effectiveness of the program such as having a school nurse in school, organizing a health camp, and providing health education on obesity prevention and management to the community or to other schools. A school director said “We will continue to implement the program because we are HPS. We will initiate other health programs and have

a school nurse in school for disease prevention, primary treatments, and first aid." (School director A).

### **Findings from focus group discussions**

The focus group discussions among the students helped support the information obtained from the in-depth interviews. Four issues were described in the following sections.

#### **1: The students' participation in the obesity management program**

Students of all schools participated in many activities. The activities were divided into three groups both for all students and overweight students as shown in Figure 1.

Many strategies were used to increase students' knowledge about weight control. These included the integrating information on weight control into all subjects, health activity day, and health learning corner in school. A student said "I received information on weight control from all subjects. I liked it so much because it was fun to learn about health and weight control." (Student D5).

Moreover, the healthy food at school was a strategy used for weight control. The student said "There was no fried, sweetened, and salty food in our lunch. Cooks also offered healthy foods such as steamed fish balls, sausage and fresh fruits without seasonings." (Student B3). The school launched the healthy food program for overweight students. A special lunch menu was provided especially for overweight students as a student said "Cooks cooked healthy food for overweight students group. For example for noodles, they used pork soup for general students, but they used vegetable soup for overweight students. Both of them tasted good and I loved to eat special food." (Student C1).

All students exercised in the morning for about 10-20 minutes. A student said "We did aerobic dance in the morning led by a leader for 20 minutes." (Student A7). One school supported students to do hula hoop exercise. A student said "All students joined the hula hoop exercise. We would do it after lunch and after school in the place prepared for this activity." (Student A5). A school had emphasized the need for exercise in overweight students both at school and at home as a student said "I played football with my overweight friends after school. When I am at home, I played sport with my brother according to my teachers' advice and I recorded the activity and reported this to the teacher." (Student B2).

#### **2: Popular activities**

Most students favor all activities as noted by these quotes "I liked all activities because they were fun and useful for us." (Student B3), and "All activities were good and I did not miss any single activity!" (Student B6). The reason that students favored the exercises was fun as a student said "I like the exercise in the morning because it was fun and it enhances my health." (Student A1).

#### **3: The effects of healthy foods and exercise on students' weight**

Healthy foods had many health benefits as students said "Low-fat and low-sugar foods were healthy. They helped maintain healthy weight which contributed to good health

and good mood." (Student A7), and "Eating healthy foods contributed to weight loss and good health; being sharp, bright, cheerful, and smart." (Student C1).

In so far as the effects of exercise on body weight were concerned, all students were aware of the benefits of exercise such as enhanced immunity and cardio-respiratory fitness. Moreover, the exercise helped control and reduce weight as students said "Exercise contributes to good health, weight loss, stamina, and enhanced immunity." (Student B9), and "Exercise helps enhance perspiration and is refreshing." (Student D2).

#### **4: Obesity among parents and child-initiated strategy directed towards the family**

Many students had obese family members. The students were aware of this problem and looked for solutions. One student said "My grandmother was obese. She loved deserts. I told her to reduce the consumption of sugar." (Student B7). A student said "My father weighed 98 kilograms and I told him to do hula hoop about one to one-and-half hours every day. Another suggestion was to avoid high-fat foods. Now, he weighs 82 kilograms." (Student A5).

### **DISCUSSION**

The weight management program activities in DLHPSs were divided into three categories: (a) raising the awareness of weight management by integrating information among all participants, (b) providing healthy foods and (c) exercise at school. The results were consistent with other studies which have shown benefit for obesity management. Such measures include nutrition information in the classroom for as little as one hour per semester,<sup>25</sup> healthy food consumption with emphasis on fruits and vegetables,<sup>26,27</sup> increased physical activity and decreased sedentary behavior.<sup>27</sup> "Healthy foods" generally means fruits and vegetables, preference for fruit over juice and low-sugar drinks; foods low in added sugar, salt, and fat; and removing seasoning from school cafeterias (the role of flavor, taste and smell in the encouragement of low energy-density food and beverage consumption is not addressed in this approach). However, similar studies have achieved reductions in sugar intake of students,<sup>28</sup> the removal of sugar and snacks from schools,<sup>27,29</sup> and the discouragement of the consumption of soft drinks and encouragement of fruit intake.<sup>30</sup> Exercise like aerobic dance in the morning and sport sessions at school and at home can play an important role in weight management. Similarly, others also found that replacement of sedentary work like watching TV, with physical activity and walking at home have positive results.<sup>27,29</sup> Both healthy foods and exercise/sport activities in our study helped students to modify successfully their unhealthy eating and exercise behaviors. Our observations are consistent with HPS policy for weight management approaches in other countries which involve measures such as school lunch programs<sup>15-17,32</sup> and physical activity programs at school.<sup>32</sup>

Parents are key players in supporting and sustaining the program activities by monitoring students' behaviors at home. If parents are positive about healthy behaviors in the family, this adds to the potential success of HPS policy<sup>33</sup> as has been repeatedly confirmed.<sup>31,34</sup> Health infor-

mation should be provided to parents by experts to enhance their understanding about the activities of the programs.<sup>26, 34</sup> Previous studies have included the activities for parents such as health education training workshops, and newsletters.<sup>35</sup>

The obstacles in rendering HPS in Thailand are attributed to policy, staff, cooperation, and resource mobilization.<sup>35</sup> The strategies previously employed by other studies included the participation of public health personnel in health projects,<sup>36</sup> the cooperation of all sectors in implementing activities,<sup>37</sup> the integration of information on obesity into classroom teachings,<sup>34</sup> providing education to parents,<sup>31</sup> the distribution of newsletters to students' family,<sup>38</sup> and modifying cooks' behaviors in preparing foods.<sup>39</sup> These were consistent with our findings. The key success factors in these programs were the intersectoral cooperation. Results from a previous study suggested that implementation policies for health-related organizations, articulately specifying their roles and responsibilities, should be developed.<sup>35</sup>

Our DLHPS experiences are transferable to other school settings. In doing so, all players or their surrogates play a key role in terms of community education, its leadership, cooks in and around the school, and teachers, parents and the students own input. The frequency and intensity of the various components of DLHPS may require customization, but it seems apparent that each component should be contributory and every opportunity should be taken to deal with the increasing epidemic of child obesity. Monitoring and feedback within DLHPS are to be expected as intrinsic to its governance and improvement.

### Limitations

While the applicability of this study is most immediate to the 4 DLHPSs, the general conclusions about intersectoral cooperation, especially in making healthy foods available and physical activity the norm at school and home, merit consideration elsewhere in Thailand and possibly in other school systems.

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### AUTHOR DISCLOSURES

The authors declare that they have no competing interests.

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## Original Article

## The diamond level health promoting schools (DLHPS) program for reduced child obesity in Thailand: lessons learned from interviews and focus groups

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### 泰国降低儿童肥胖的钻石级健康促进学校计划：从访谈和小组讨论中学到的经验

儿童超重和肥胖的发病率在全球不断增加。泰国已经启动健康促进学校政策来解决这个问题。肥胖管理计划执行最好的学校被评为钻石级健康促进学校 (DLHPS)。然而，这些学校所使用的方法和这些方法的功效没有得到很好的记录。本研究旨在定性分析肥胖管理计划中的 4 所 DLHPS 所采用的方法和活动。采用深入采访的方法从学校领导、老师和厨师中获得信息，而采用小组讨论的方法从学生中获得信息。以学校为基础的肥胖管理计划源于健康促进学校政策和超重学生患病率的增加。团队合作一直是项目实施的关键策略。政策的传播和分工由学校董事们安排。采用监督程序以保证计划的实施。本研究最明显的成功因素是跨部门合作。面临的挑战包括：获得 DLHPS 状况标准的混淆，父母的参与，学生对消费蔬菜等健康食品的抵触。从学生的小组讨论中获得的最宝贵的 3 项活动是：课堂上健康和营养知识的学习；食堂提供健康的食物和饮品，而去除软饮料和不健康的调味品；和体育锻炼。部门间的合作是 DLHPS 可操作性成功的关键因素，尤其是学校和家庭提供健康的食物，以及常态的体育锻炼。

**关键词：**儿童肥胖、管理策略、健康促进学校、跨部门合作、健康食品和运动