Development of a Family and School Collaborative (FASC) Program to Promote Healthy Eating and Physical Activity among School-age Children*

Jutamas Chotibang, Warunee Fongkaew, Ladda Mo-suwan, Janet C. Meininger, Pimpaporn Klunklin

Abstract: Childhood obesity, a serious public health concern, has a high prevalence with long-term negative physical and mental health consequences. Prevention and treatment of obesity are considered a priority among pediatric health care providers. This participatory action research, using empowerment strategies with 110 school stakeholders, aimed to develop a family and school collaborative program for promoting healthy eating and physical activity for school-age children. Quantitative data were analyzed using descriptive statistics, while qualitative data were subjected to content analysis.

The study findings revealed the program had five core components including: situational analysis, family and school collaboration, exploration of effective interventions, implementation of planned activities, and monitoring and evaluation. Methods of program implementation included: group discussions; brainstorming and mind mapping; group meetings; and, participatory workshops.

The impact of program implementation was evident, with family and school collaboration, in: initiating school policy, developing practical guidelines and implementing obesity prevention activities. Activities created a supportive environment by disallowing sale of sodas and unhealthy snacks; developing a curriculum for enhancing the capacity of student leaders; promoting physical activity; providing a healthy school lunch and snack menu; providing obesity prevention education; conducting child nutrition status surveillance; and, developing a database for tracking children's status over time. The program could be used as a guideline for nurses and health care personnel to enhance partnerships, between families and schools, in order to promote healthy eating and physical activity in school-age children.

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Introduction

Child obesity is a serious public health problem, in Thailand, with prevalence, in 5 to 12 year olds, of 13.6% in 2002 and 15% in 2006.[1] These percentages were higher than those projected in the Tenth National Economic and Social Development Plan.[2] In 2006, in Chiang Mai, Thailand, the prevalence of overweight and

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obese 6 to 15 year old students, from both public and private elementary and secondary schools, was found to be 15.7%, while the percentages of school-aged children who were obese, pre-obese and overweight, throughout Thailand, were found to be 5.83%, 6.07% and 3.82%, respectively.[1] The prevalence of overweight students, in public schools, was found to be 13.6%, while in private schools it was 17.7%. [3]

Review of Literature

The prevalence of obesity and overweight is increasing worldwide. In developing countries, there has been a shift from acute infectious diseases to chronic non-infectious diseases. This shift has been attributed to the adoption of Western products and practices, resulting in reduced levels of physical activity and changes in dietary composition, including more saturated fat and less fiber.[4] In Thailand, childhood obesity has become a serious public health problem that has reached epidemic proportions.

Obesity affects the physical, psychological and social status of children. Numerous long-term physical health problems have been associated with childhood obesity, including hyperlipidemia, hypertension, slipped capital femoral epiphysis, sleep disorders, type II diabetes and gall bladder disease.[5] Moreover, being overweight has an impact on children's level of self-esteem and creates problems in social relationships with peers, subjecting them to teasing and ridicule, eventually resulting in social withdrawal.[5]

Obesity most commonly begins in childhood between the ages of five and six, and during adolescence. Children whose body mass index (BMI) is equal to or greater than the 95th percentile are more likely to be obese as adults.[6] The American Academy of Child and Adolescent Psychiatry (AACAP)[7] has pointed out that a child who is obese, between the ages of 10 to 13 years, has an 80% chance of becoming an obese adult. Therefore, as the number of obese children continues to increase, the epidemic of obesity worsens.

A review of the literature revealed that no prevention programs have been tested with school-age children in Thailand, and that most of the childhood obesity prevention strategies have been carried out in the United States of America (USA), the United Kingdom (UK), Canada, Chile and Australia.[8-17] A review of childhood obesity prevention programs shows that the components of successful programs include health education, physical education, school food service and parental involvement. Unfortunately, several approaches to the prevention of childhood obesity have been largely unsuccessful and unsustainable. This might be due to the fact that the programs have been developed according to experts' views, instead of using research methods that emphasize developing action plans in partnership with the community, so as to meet community identified needs.

In Thailand, strategies for controlling and preventing childhood obesity need to be well researched and analyzed for appropriate methods and contexts in various regions of the country. Techniques must suit local cultures, and the methods used should promote participation of local people in the research process and provide a rapid assessment of social awareness on childhood obesity and health behavior.[18] Hence this study, in order to prevent childhood obesity among school-age children, attempted to develop a family and school collaborative (FASC) program by means of participatory action research.

Participatory action research (PAR) focuses on developing partnerships and collaborations to increase the relevance of research for the researcher, consumers and stakeholders.[19] The emphasis of PAR is on developing action plans in partnership with the community to meet community

identified needs. This approach provides an understanding of childhood obesity issues, within the context of the community, while increasing the community's understanding of the issues.

Purpose and Aims of the Study

The overall purpose of the project, using a participatory action research approach, was to develop a family and school collaborative program to promote healthy eating and physical activities among school-age children in Chiang Mai province, Thailand.

The specific aims were to:

1. Engage the participation of students, parents and school personnel to promote healthy eating and physical activities among school-age children;
2. Explore the needs and concerns of participants in relation to childhood nutritional status and the prevention of childhood obesity;
3. Work with stakeholders to develop and implement a family and school collaborative program in Chiang Mai province; and,
4. Evaluate the impact of program implementation.

Method

Research Design: Participatory action research was used in this study. The research procedures were focused on collaboration among school-age children, school personnel, parents and the primary researcher. The research process began by looking at the problems in the real context (Look); leading to thinking (Think); and then doing (Action), as outlined by Stringer.[20]

Ethical Considerations: This study was approved by the Ethical Committee of the Faculty of Nursing of the primary investigator's institution. Data collection procedures were designed to cover all aspects of protection of the rights of human subjects. Moreover, potential participants were told the purpose of the study and their right to decline participation or withdraw from the study at any time. Those who agreed to participate were asked, by the primary researcher, to sign an informed consent form. Permission for their child's participation was obtained from the parents of the school-aged children who participated in the study. In addition, the children gave verbal assent to participate and were told they were free not to participate, as well as discontinue participation at any time.

Setting and Participants: This project took place with a purposive sample from one public school in an urban area in Chiang Mai province, Thailand. The school, which is open to students in grades one to six, is under the administration of the Chiang Mai Educational Service Area, Office 1, Basic Education Commission. As of May 18, 2006, a total of 1,204 children were enrolled. Although, since June 1, 2004, this school district had been participating in the Health Promotion Program in Thailand,[21] it lacked specific, practical guidelines for supporting healthy eating and physical activity.

Participants consisted of three groups, which include the core working group, stakeholders for needs assessment, and team members for implementing the program. The core working group was comprised of 8 teachers who made an agreement with the primary investigator to jointly conduct the research. The stakeholders for needs assessment were: a) 44 school-age children who were in grade four and agreed to participate in this study with their parents' permission; b) 44 parents of school-age children in grade four; c) 5 teachers who taught the nutrition subjects and another teacher who also taught the grade four students; d) 3 school administrators who were responsible for health projects; e) 6 cafeteria staff members

who were in charge of the school food services; and, f) 8 vendors who were selling food and drinks in the school. Team members for implementing the program were: a) 8 core working group members; b) 36 school-age children in grades four to six; c) 6 parents; and, d) 2 expert consultants who were responsible for policy making or involved in the health promoting school project to approve obesity prevention activities.

Data Collection: Data were collected through interview; participant observation; participatory workshops with stakeholders; and, meetings with individuals and groups to discuss, monitor and reflect on the progress of the research. Additional data collection methods included environmental assessment of the school and the surrounding community, focusing on foods and opportunities for physical activities, and measurements of height and weight of school-age children.

Data Analysis: Quantitative data were analyzed with descriptive statistics and content analysis was used for qualitative data.

Results

The findings of this study are presented in three parts: 1) the process of FASC program development; 2) the core components of the FASC program; and, 3) the impact of implementing the program.

1) The process of FASC program development

The processes of FASC program development consisted of five phases, including: 1) establishing partnership; 2) assessing obesity problems and needs; 3) identifying and planning the practical guidelines for the program; 4) implementing the program; and, 5) sharing lessons learned. This process is illustrated in **Figure 1.**

Phase I: Establishing partnership: The first phase of the participatory action research aimed to find a team of core members of a working group from the school and to make a mutual commitment to conduct the research. The primary researcher met and presented the importance of the research project to the Director of the school, as this would evolve to a mutual commitment. Together they formulated a core working group, namely the "Collaboration for Healthy Thai Kids Project."

The core working group was comprised of eight volunteers, including: one school director; two assistant directors; two health education teachers; one physical education teacher; one science teacher; and, one grade four class teacher. At the initial meeting for the core working group, the primary researcher made an agreement to jointly conduct the research. The roles of the core working group were defined as: 1) designing and setting an action plan with the primary researcher throughout the research project; 2) participating in development of a program; 3) coordinating with the primary researcher and the participants; and, 4) facilitating and providing consultation to the student leaders and team members in order to promote healthy eating and physical activities among students in the school. The principles and concepts of PAR, and the research procedures, were discussed.

The core team identified groups of stakeholders that were concerned with the promotion of healthy eating and physical activities of students. These were students, parents, school administrators, teachers, cafeteria staff members and shop vendors in the school. The researcher sent a letter regarding protection of the rights of human participants to the volunteer stakeholders (forty-four parents, three school administrators, five teachers, six cafeteria staffs, and eight shop vendors in the school) to inform them of the details of the research project and request their cooperation as study participants. In addition, the primary researcher: sent the students a letter regarding protection of the rights of human participants, asked for approval from each of the student's parents and requested the

parents return the signed form within one week to show their consent for their child to participate in the study.

Phase II: Assessing obesity problems and needs The assessment phase aimed to empower stakeholders, in order to increase understanding of childhood obesity and its prevention, and to enhance family and school collaboration. This phase consisted of three steps: The first step was to assess the stakeholders' perceptions of childhood obesity, environmental factors that impact it and the potential to address it in the school context. Using participant observation, the primary researcher and core working group gathered preliminary data and assessed the school's potential by way of: observing the school environment and surrounding community; interviewing stakeholders; and, participating in school activities focused on students' eating behavior and physical activities. This assessment revealed that each group of the stakeholders was aware of the childhood obesity situation from a different perspective. Students were only aware of the increasing number of obese children, whereas parents, teachers, cafeteria staff members and shop vendors were concerned more with the increasing risk of obesity, the consequent adverse effects of childhood obesity and the importance of prevention programs.

In the second step, the core working group analyzed and reflected on the assessment data, to clarify the childhood obesity situation of the school. In the group discussion, the core working group members shared their own understanding and ideas about the existing childhood obesity problems, which included the: school environment; students' eating behaviors; students' physical activities; and, school's activities. In the school environment there were inadequate areas for physical activities, unhealthy foods were being sold inside and outside the school, and an internet and computer game shop was nearby the school. This school did not have a nutrition surveillance program and database, and no campaigns had been undertaken for childhood obesity prevention. Moreover, the students' eating behaviors and physical activities were unhealthy, due to changes in lifestyle, including more sedentary activities (i.e. excessive computer usage), and eating more fast foods with high fat and high sugar content.

In the third step, members of the core working group were trained to conduct participatory workshops, in order to: assess needs and concerns of key stakeholders; raise awareness of the childhood obesity issues; and, identify guidelines for obesity prevention. Stakeholders included: 44 school-age children; 44 parents; 5 teachers; 6 cafeteria staff members; and, 8 shop vendors. Participatory workshops were carried out, by the core working group, for each of these stakeholder groups, as well as measurement of weight and height of the school-age stakeholders.

During the participatory workshops, all stakeholder groups defined childhood obesity as children having body weight above the norms that could be considered obese, which was viewed as a disease. The meaning of obesity comprised three main points, including: (a) the effect of obesity on physical and psychosocial health of school-age children; (b) obesity is a severe disease; and, (c) obesity occurred among school-age children, because of unhealthy eating behavior and lack of physical activity.

After assessing the needs and concerns, group discussion with the core working group was arranged to reflect on existing data and to share their experiences. The core working group gained more knowledge and confidence to assess the: childhood obesity situation; school's potential to make changes; nutritional status of school age children; and, needs and concerns of stakeholders. They had increased understanding of childhood obesity prevention and awareness of collaborative

work, in order to promote healthy eating and physical activity, with school-age children, family members and school personnel.

Phase III: Identifying and planning the practical guidelines for the program The third phase of the participatory process was to arrange brainstorming and mind-mapping activities with stakeholders, in order to identify prevention guidelines and plan the activities. Participants were encouraged to share data and learn from one another. This phase consisted of two steps: 1) analyzing risk factors and interpreting data on obesity prevention guidelines desired by stakeholders; and, 2) reflecting on the program envisioned by stakeholders and setting priorities for practical activities. The primary researcher provided a systematic review of existing obesity prevention programs to all stakeholders and assisted them in understanding available data on childhood obesity prevention.

After analyzing the data from stakeholder groups, the core team reflected on the results of participatory workshops with all stakeholders. They identified a hierarchy of influences on child nutrition status, which included risk factors related to the child, family, school, community and media. The risk factors related to the child were: unhealthy eating behaviors and few physical activities; lack of knowledge; increases in sedentary behaviors; and, genetic risks for obesity. Family factors included childrearing practices, and home environments that did not support healthy eating and active lifestyles. Parental influences consisted of: not acting as a role model in eating healthy diets and doing regular exercises; not encouraging children's vegetable and fruit consumption; and, buying and stocking up on unhealthy food and snacks at home. The identified school factors included: lack of an obesity prevention campaign; need for child nutrition status surveillance and database; and, lack of physical activities and healthy food options in the school environment. Community factors, such as changing environments and norms in Thai society, and media influences, such as advertisements and marketing techniques of unhealthy foods to children, were noted.

Group meetings were organized to consider appropriate activities for the school context. The stakeholder groups identified 10 childhood obesity prevention activities: 1) training student leaders to arrange activities to promote healthy eating and physical activity; 2) encouraging students to be more physically active; 3) developing a clear school policy on promoting healthy eating and physical activity; 4) supervising shop vendors in the types of foods and drinks sold to school children; 5) providing healthy school lunches and snacks; 6) enhancing family and school collaboration; 7) conducting a nutrition surveillance program and developing a nutrition status database; 8) organizing obesity prevention campaign activities; 9) developing a pocket guide for educating stakeholders; and, 10) integrating nutrition education and physical activity into the school curriculum.

The primary researcher was a facilitator in the discussion and provided support for stakeholders, in order to promote family and school collaboration. At the completion of this meeting, the core working group realized that cooperation from families was necessary to have students, family members and school personnel share their problems and needs, and that they should intervene to meet needs of the stakeholders. They gained more confidence in enhancing stakeholders' collaboration and working as a team.

Phase IV: Implementing the program The implementation phase aimed to: promote collaboration in organizing prevention activities in the school, by establishing a partnership between families and the school, and enhance potential of team members to implement the program. This phase was composed of three steps: 1) engaging team members to develop guidelines for the

program; 2) implementing the program; and, 3) evaluating the feasibility and appropriateness of the program. A total of 50 team members participated in this phase, including 36 school-age children, 6 parents, 5 teachers and 3 school administrators. The primary researcher explained and shared her understanding of the process of PAR. The team members agreed that the PAR method was an appropriate approach for the study. In order to develop childhood obesity prevention guidelines (**see Table 1**), the primary researcher provided support and assistance.

Table 1 Implementing the FASC program

Activities	Responsible Persons	Interventions	Results
1. Developing school policies to promote healthy eating and physical activities.	All stakeholders	1.1 Writing school health policy that commits the school to promote healthy eating and physical activity. 1.2 Establishing a plan of health promotion activities. 1.3 Evaluating the feasibility and appropriateness.	- School developed a new school policy that was created by stakeholders. - Established collaboration among students, parents, and school personnel to implement the activities.
2. Developing a curriculum for enhancing capacity of student leaders.	Parents and teachers	2.1 Acknowledge the meaning, causes and impact of obesity through a tale and an animation cartoon. 2.2 Nutrition education. 2.2.1 Having a main course appropriate for children's age. 2.2.2 Selecting foods for nutritional values and safety. 2.2.3 Snacks for school-age children. 2.3 Physical activity education. 2.4 Nutrition status self-assessment.	- School developed a curriculum for enhancing capacity of student leaders. - School developed 30 student leaders for implementing the program.
3. Providing actions to promote students' physical activities.	Teachers	3.1 Providing, before class in the morning, aerobics dancing or Northern Thai dancing. 3.2 Providing Thai play games during lunch break. 3.3 Providing, during study time, physical activity and physical education. 3.4 Providing physical activity after school. 3.5 Providing physical activity on special days.	- Doing aerobics dancing in the morning for 20 minutes, 3 times per week. - Setting up sports groups for interested students. - Doing Thai play games conducted by student leaders.

Table 1 (continued)

Activities	Responsible Persons	Interventions	Results
4. Creating a supportive environment.	Teachers and vendors	4.1 Disallowing the sale of soda and unhealthy snacks. 4.2 Providing exercise equipment. 4.3 Providing recess time to play and exercise.	- The school provided the campaign "No soda or crisps." - Provided a place and equipment for exercise.
5. Providing a healthy school lunch and snack menu.	Teachers and cafeteria staff members	5.1 Educating cafeteria staff members about preparing food without added sugar, salt and oil; and adding vegetables to 3 meals per week. 5.2 Providing a healthy lunch and snack menu that was evaluated by a nutrition expert. 5.3 Providing fruit as a snack, three servings per week. 5.4 Providing, everyday, healthy drinks (e.g. water, natural juices) that had no sugar content exceeding 5%, in addition to unsweetened milk.	- Provided a healthy school lunch and snack menu.
6. Conducting child nutrition status surveillance and creating a database.	Teachers and students	6.1 Measuring the height and weight of all students with the student leaders. 6.2 Training school personnel for using the Nutritional Assessment System Program. 6.3 Conducting child nutrition surveillance by using the Nutritional Assessment System Program and database.	- Student leaders learned how to measure height and weight and the meaning of body mass index (BMI). - School personnel used the Nutritional Assessment System Program. -Developed child nutrition status surveillance and database.
7. Providing obesity prevention education among parents and school personnel	Teachers and parents	7.1 Providing the pocket guide for promoting healthy eating and physical activity among parents and school personnel.	- Parents and school personnel used the pocket guide to promote healthy eating and physical activity of the students.

Table 1 (continued)

Activities	Responsible Persons	Interventions	Results
8. Integrating the nutrition and physical activity education into the school curriculum.	Teachers	8.1 Providing nutrition and physical activity education activities that were fun and appropriate for the Thai culture. 8.2 Emphasizing the positive appealing aspects of healthy eating, rather than the harmful effects to unhealthy eating.	- Integrated the nutrition and physical activity education into the school curriculum.
9. Conducting campaign activities for preventing childhood obesity.	Students, parents and teachers	9.1 Organizing a motto competition, exhibition, bulletin board and newsletter on preventing childhood obesity.	- School had a campaign activity each semester.
10. Controlling food and snacks sold in the school		10.1 Educating cafeteria staff for preparing food without added sugar, salt and oil 10.2 Providing nutrition and physical activity education. 10.3 Controlling food and snacks sold in the school by student leaders	- only fruit juice, milk, fruit in season and ice cream were allowed to be sold in the morning and during lunch break. - Controlled food and snacks sold in the school by student leaders and no soda or crisps.
11. Enhancing family and school collaboration.	Teachers, parents and students	11.1 Enhancing partnership among students, parents and school personnel for implementing the program. 11.2 Providing knowledge and skill for implementing the program.	- Achieved a school model for enhancing partnership in urban Chiang Mai province, Thailand. - Set up a parenting club on childhood obesity prevention. - Students, parents and school personnel were able to work together.

The feasibility and appropriateness of the prevention activities were approved by 2 child health experts and implemented, by the working team, from November 2006 to September 2007. After three months of developing the FASC program, it was evident that the program was

feasible and appropriate for the public school being used as the site for this research project. The stakeholders expressed that the process could enhance the partnership between family and school to work as a team and implement the prevention activities. Team members had gained more confidence in their potential; developed ability to undertake activities on their own; and, became more confident in their abilities, which resulted in collaboration efforts to deal with childhood obesity in ways that could be sustained over time. Moreover, other families and school personnel, who had participated in implementing the prevention activities, felt that these activities were very useful for school-age children, and expressed interest in becoming team members. They realized the program development needed a core working group to function as collaborators between family and school, and to provide appropriate activities to meet needs of the stakeholders.

Phase V: Sharing lessons learned This phase, aimed at concluding the program, involved the primary researcher facilitating a participatory workshop with all stakeholders and providing consultation. The primary researcher encouraged all participants to contribute to the discussion, and stimulated participants to share information, ideas, experiences and knowledge. The results demonstrated that the participatory approach created positive experiences for all stakeholders. This study resulted in the creation of effective partnerships between families and the school. Moreover, these partnerships provided opportunities to learn a great deal about the research process, promoted healthy eating and physical activity, and acted as agents of change.

During the participatory workshop, team members expressed that the strengths of this study included: 1) providing knowledge and understanding of the childhood obesity situation; 2) raising awareness of all stakeholders for preventing childhood obesity; 3) using existing social capital in the school; 4) conducting the childhood obesity prevention activities by team members for sustainability of the program; and, 5) learning by use of the sharing process among stakeholders. Furthermore, the core working group mentioned that some parents, core working group members and student leaders, because they had to work or study, could not attend some meetings or participate in some activities. Therefore, in the future, the core working group should provide available time, especially on weekends, to ensure full participation and sustain commitment to join in every step of the project.

(2) The core components of the FASC program

The FASC program was developed from the collaboration of all stakeholders concerned with making the program suitable for the problems and needs of stakeholders. The program was delivered through a partnership between families and the school to promote healthy eating and physical activities among urban school-age children, grades one to six. The core components of the FASC program were: 1) situational analysis aimed to raise awareness of the obesity problem in the school and to solve the problem; 2) exploration of existing activities aimed to understand the effectiveness of the interventions that focused on eating behavior and physical activity for the prevention of childhood obesity; 3) family and school collaboration aimed to provide knowledge and understanding of implementation the FASC program so that stakeholders realized the importance of family and school collaboration, and commitment to participate in all prevention activities throughout the participatory action research; 4) implementation of planned interventions aimed to enhance the capacity of participants to be in charge in this program in order to promote healthy eating and physical activity for childhood obesity prevention; and, 5) monitoring and evaluation aimed to follow-up and evaluate the feasibility and

appropriateness of the program and to adjust each activity to better serve the stakeholders' needs for sustainability of the program. The core components could be guidelines, to develop obesity prevention programs, for other public schools in urban areas in Chiang Mai province.

(3) Impact of implementing the family and school collaborative program

After developing of the FASC program, it was found that the core working group, primary researcher and stakeholders had opportunities to learn a great deal about childhood obesity issues, concerns, engagement and the research process. As the stakeholders came and worked together, they gained a sense of satisfaction with this engagement, including: (1) raising awareness of childhood obesity problems; (2) creating partnerships between various stakeholder groups; (3) providing advantages for students, families and the school; and, (4) developing a sense of satisfaction with the participation and the empowerment process. Overall, the program implementation was feasible and appropriate for preventing childhood obesity, such as: (1) enhancing the capacity of the 30 student leaders for childhood obesity prevention; (2) developing an action plan within the school calendar and setting it as policy; (3) organizing activities to promote students' physical activities; (4) changing the school's lunch and snack menus to take students' daily nutritional intake into account; (5) conducting nutrition surveillance and developing the student nutrition database; (6) setting up parent leaders to work with teacher leaders; (7) conducting campaigns for obesity prevention in the school; and, (8) controlling food and snacks sold in the school.

Discussion

The FASC program could be used as an important guideline for nurses and health care personnel to enhance partnerships between families and schools, so as to promote healthy eating and physical activity. Use of this approach can be helpful in understanding the complex interaction among the social, cultural and environmental factors that contribute to childhood obesity. Moreover, the school policy developed, to sustain efforts to prevent childhood obesity, could be integrated to build a healthy public policy. Although every school in Thailand follows the government policy in the "Health Promoting School Project," many schools may lack practical, locally appropriate guidelines for promoting healthy eating and physical activity.

Young and William[22] found the "Health Promoting Schools" philosophy was an approach that teachers can directly contribute to, regarding child health, while also viewing the child as part of a wider community. It extended beyond the classroom and ensured participation by stakeholders in program development. This process was to ensure ownership and successful implementation. Therefore, the lack of practical guidelines was a situation for concern. It is important for school administrators and school personnel to be aware that practical guidelines for promoting healthy eating and physical activity provide a means to prevent childhood obesity.

The strategies used for this program were: raising awareness; encouraging participants to share and learn; establishing partnerships; building capacity; and, facilitating and providing consultation. These strategies were consistent with the processes of participatory action research. Through this research approach, the critical elements of community involvement with full participation, democracy, emancipation and liberation were addressed.[23-26] Recently, nurse researchers have been turning to PAR as a research method, because the action plan emanates from stakeholders' needs, consciousness raising and emancipation,[27] and family

involvement and participation.[28, 29] The main reason attributed to the successful use of PAR was the full participation and involvement of the community. The results are consistent with a study of the "Health of Canada's Seniors' Independence Program," which showed that PAR emerged the best community participation process with full community involvment.[30]

The collaboration between families and the school provided a means for all stakeholders to participate fully in the research process. This collaboration was an important foundation for a successful childhood obesity program, which included practical activities for healthy eating and physical activity for school children. Furthermore, sustainability of the activities is the goal of any health promotion project. Meister and De Zapien[31] indicated that social action focused on policy change can perpetuate collaboration and contribute to sustainability. Moreover, short-term success contributes to long term effectiveness of the activities. Long-term sustainability of this childhood obesity prevention program could be examined, in the future, through reassessment of nutritional status of the children and continuing effectiveness of the new activities and policies.

Limitations

1. This study was conducted at a primary school in Chiang Mai province, Thailand, and it might not be replicable elsewhere. Therefore, the findings of the study should be generalized, and applied with extreme caution, only in a similar setting.

2. This program guideline for conducting research to establish a collaborative childhood obesity prevention program required the full participation of all stakeholders.

3. This program focused only on students' with an obesity problem and not on obesity problems of parents, teachers, cafeteria staff or shop vendors.

Conclusions

This study aimed to develop a family and school collaborative program to promote healthy eating and physical activity among school-age children, based on a participatory approach. The research findings suggest directions for clinical practice, nursing education, health policy and future research. The findings could be applied in nursing practice, including developing a FASC program in other public schools, and providing the childhood obesity prevention activities to meet school policies. Nurses should be provided with the opportunity to undergo training on childhood obesity prevention, as a school-based program, and should encourage the school administrator to set up a committee for dissemination of clear school policies. Furthermore, the school administrators could support the program by motivating the involvement of school personnel and providing resources necessary to apply the policies in the actual school context. In nursing education, faculty could be oriented to the role of the school nurse and be taught specific strategies for enhancing partnerships between families and schools. In relation to health policy, this program could be used as a foundation for addressing and sustaining the prevention of childhood obesity at the school level. In terms of research, the program could be continued in this school and replicated in other schools, applying participatory methods to promote children's health in relation to prevention of obesity and other health issues.

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การพัฒนาโปรแกรมความร่วมมือระหว่างครอบครัวและโรงเรียนเพื่อส่งเสริมการบริโภคเพื่อสุขภาพและกิจกรรมทางกายในเด็กวัยเรียน*

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บทคัดย่อ: ปัญหาโภชนาการเกินหรือโรคอ้วนเป็นปัญหาสาธารณสุขสำคัญที่มีอัตราความชุกของโรคสูงและมีผลทางลบในระยะยาวต่อสุขภาพทั้งทางด้านร่างกายและจิตใจ บุคลากรในทีมสุขภาพจึงได้ให้ความสำคัญต่อการป้องกันและแก้ไขปัญหาโภชนาการเกิน ซึ่งในการศึกษาครั้งนี้มีวัตถุประสงค์เพื่อพัฒนาโปรแกรมความร่วมมือระหว่างครอบครัวและโรงเรียนเพื่อส่งเสริมการบริโภคเพื่อสุขภาพและกิจกรรมทางกายของเด็กวัยเรียนโดยใช้กลยุทธ์ในการส่งเสริมพลังอำนาจแก่ผู้มีส่วนได้ส่วนเสียทั้งหมด 110 คน วิเคราะห์ข้อมูลเชิงปริมาณโดยใช้สถิติเชิงพรรณาและวิเคราะห์ข้อมูลเชิงคุณภาพโดยใช้การวิเคราะห์เชิงเนื้อหา

ผลการศึกษาพบว่า เด็กวัยเรียนรับรู้แต่เพียงว่า ปัญหาเด็กอ้วนมีแนวโน้มเพิ่มขึ้น ส่วนกลุ่มผู้ปกครอง ครู แม่ครัวและพ่อค้าแม่ค้ารับรู้ในประเด็นอื่นด้วยว่าในปัจจุบันเด็กมีความเสี่ยงต่อการเกิดโรคอ้วนมากขึ้น และความอ้วนมีผลกระทบต่อสุขภาพเด็กและควรให้ความสำคัญกับโปรแกรมการป้องกันโรคอ้วน เนื้อหาของโปรแกรมความร่วมมือระหว่างครอบครัวและโรงเรียน ประกอบด้วย 5 ส่วน คือ การวิเคราะห์สถานการณ์การศึกษาการดำเนินกิจกรรมที่มีประสิทธิภาพ การสร้างความร่วมมือของ ครอบครัวและโรงเรียน การดำเนินกิจกรรมตามแผนงาน การติดตามและประเมินผล และวิธีการสร้างการมีส่วนร่วมมี 4 วิธี คือการอภิปรายกลุ่ม การระดมสมองและการทำแผนที่ความคิด การประชุมกลุ่ม และการจัดกิจกรรมแบบมีส่วนร่วม

ผลกระทบที่เกิดขึ้นคือ เกิดความร่วมมือระหว่างครอบครัวและโรงเรียน ในการกำหนดนโยบายและการพัฒนาแนวทางการปฏิบัติและการปฏิบัติกิจกรรมในการป้องกันโรคอ้วน ได้แก่ การจัดสิ่งแวดล้อมที่เอื้อต่อการส่งเสริมสุขภาพโดยห้ามขายน้ำอัดลมและขนมกรุบกรอบในโรงเรียน การพัฒนาหลักสูตรเพื่อส่งเสริมศักยภาพของแกนนำนักเรียน การส่งเสริมกิจกรรมทางกาย การจัดอาหารกลางวันและอาหารว่างเพื่อสุขภาพ การให้ความรู้เรื่องการป้องกันโรคอ้วน การเฝ้าระวังภาวะโภชนาการ และการพัฒนาระบบฐานข้อมูลสำหรับติดตามภาวะโภชนาการของเด็ก โปรแกรมความร่วมมือระหว่างครอบครัวและโรงเรียนที่ได้พัฒนาขึ้นจากงานวิจัยครั้งนี้ พยาบาลและบุคลากรทีมสุขภาพสามารถนำไปใช้เป็นแนวทางในการสร้างความร่วมมือระหว่างครอบครัวและโรงเรียนเพื่อส่งเสริมการบริโภคเพื่อสุขภาพและกิจกรรมทางกายแก่นักเรียนในโรงเรียน โปรแกรมนี้ได้ให้วิธีการในการสร้างนโยบายสาธารณะเพื่อสุขภาพในการป้องกันโรคอ้วนในโรงเรียนอย่างยั่งยืนต่อไป

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