



Community & School Related Promotion of Healthy Eating
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In contrast to the scarcity of evidence showing that community-based interventions can be successful in nutrition health promotion for youth, there is an abundance of such evidence for school-related programs. The most recent, comprehensive and authoritative source, is a text prepared by panel of experts under the auspices of the Institute of Medicine in United States. The text, Schools and Health: Our Nation's Investment, [221] provides a full explanation of the health behavior impacts of well-designed school-based interventions.

A paper done for the Inter-American Heart Foundation [222] also provides a full explanation of how a combined set of interventions using the school setting can be effective in promoting heart health and healthy eating. This combined approach using the school setting has been discussed with regard to heart health by several researchers [223, 224, 225 a].

This school-based approach has also been well explained in regard to promoting lifelong healthy eating. The Center for Disease Control in the United States has prepared comprehensive guidelines for school health programs to promote healthy eating [227]. These guidelines identified the nutrition risks, described the eating behaviors of children and adolescents, underlined the need for school-based nutrition education, as well as, a comprehensive school health approach, listed practical strategies and examples, and presented related standards. A shorter Canadian version has been published by Health Canada in cooperation with the Canadian Association for School Health [227 a].

The role of the community health nurse or physician in promoting and using such school health programs has been described by McKay et al [228]. We have also located an example from Prince Edward Island where the Heart and Stroke Foundation undertook a comprehensive school health approach to heart health [229].

This review identified many examples of combined intervention approach using the school setting. Several of these examples described the results of The Child and Adolescents Trial for Cardiovascular Health [CATCH] [230a, 230b., 230c., 230d., 230e., 230f., 230g., 230h, 230i 230j., 230k.]. Another series of evaluation reports were located on the Heart Smart Program [231 a, 231b., 231c., 231d.].

Several other examples were found including; Heart Partners in Texas [232], school-based programs for preventing eating disorders in Minnesota [233], the “Five Today” initiative from the Cancer Society in United States [234], a “Gimme 5” program in North Dakota [235], the “Five Today Power Plus Program” in St. Paul, Minnesota [236], interventions in socially disadvantaged primary schools [237], promoting physical activity and a healthy diet [238] the “Grow For Health Program” [239], the “Great Sensations Program” in Baltimore, [240] promoting healthy body image [241], combining physical education and the “Go For Health Program” [242] to target reduction in salt [243], and a combination of nutrition policy and other interventions [244]. A list of other references that combine interventions using the school has also been provided [245].

Parent Education/ Involvement

Involving and supporting parents in heart health promotion through schools has been well explained in a paper prepared for the Heart & Stroke Foundation of Canada.

A Continuum of Parental Involvement is Needed

Not all parents have the time or resources to be fully involved in school activities. Consequently, there needs to be a variety of specific ways that parents can become involved. Individual parent involvement in school-related health promotion can occur in these ways.

- being regularly informed of their child's academic progress in health instruction, as well as, their human, social and healthy development
- receiving additional, regular reports when their child is experiencing difficulty
- being informed of health or social problems relevant to their community
- receiving information on the goals of the school's health programs and relevant community health services
- being involved in home-based learning activities that support the health curriculum and classroom instruction
- responding to surveys on school health issues and programs
- being educated or trained in parenting skills or strategies on specific health problems
- being a parent volunteer for school activities relating to health
- electing parents to school advisory committees or councils that take an interest in health issues

Collectively, parents can be involved in these ways:

- organizing a parent information meeting, workshop, parenting course or parent resource center in the school
- serving on a parent committee or subcommittee on health
- fundraising for health materials, resources or equipment for the school
- forming a group to advocate for school or community health policies, programs or services
- advocating for policy from the municipality, school board or board of health
- forming or joining a voluntary or self-help group

Inform, Educate, Involve and Empower

Based on the review of the research, it is suggested that schools can develop four different types of approaches to programs to engaging parents in school-related health promotion. They are informing, educating, involving and empowering.

Informing parents about health issues, programs and policies. This is the type of approach most often used by schools and health agencies. The strategy is to raise general awareness within the population using the school as a site to transmit information.

Educating or training parents in health-related knowledge or skills. There are several programs addressing single health issues, as well as, general parent effectiveness programs that illustrate this type of approach. Often an external agency partners with a school to offer this type of program. At-risk families are often seen as the client for such programs.

Involving parents with their children's learning or in school/community decision-making about health education, prevention and promotion. This type of program seeks to change the way

programs, services and policies are developed and implemented within the school, district, health agency or community.

Empowering parents to influence public policy decisions. The goal of these activities is to share the decision-making process with parents so that self-help or advocacy groups are supported and new or different programs, services or policies are introduced that support parental participation.

Barriers to Parent Participation

The barriers to effective parental participation in school-related health promotion activities has been documented in the education and health promotion literature (Fullan, 1991; Durkin & Kingdon, 1995; Mangham, 1992; White et al, 1992; Hahn et al, 1996; Lontos, 1992).

Barriers for Parents

- Times for involvement are inconvenient for working parents
- Transportation and baby-sitting cost
- Cultural and language barriers
- Previous negative experiences or attitudes towards schools
- Feelings of inadequacy, failure and poor self-worth
- Confusion with education health jargon
- Failure by school to use multiple and innovative forms of communications (student's enthusiasm is best attraction)
- Lack of coordination between school and health agencies
- Communications from school usually focus on problems.

Barriers for Educators

- Minimal commitment to parent participation
- Doubts about their abilities to work with at-risk parent
- Concern about sensitive health issues
- Concern that teaching authority will be undermined
- Lack of time and funding for school-parent communications
- Inadequate teacher access to communications technologies (e.g. voice-mail)
- Some parents are motivated by single concern only, and therefore are not representative
- Teacher expertise is not recognized

Ten Strategies for Involving Parents

There are a variety of strategies that schools can use to engage parents in health promotion (Mangham, 1992; Hahn, 1996; Woody, 1985; Burch, 1985; Lontos, 1992; Bond & Wagner, 1988).

1. Reach out beyond white, middle class families to include blue collar parents, single parents, families of minority cultures, families in rural areas, inner-city families, foster families.
2. Rely less on experts and more on parents to determine the goals of programs and to rate the success of programs. Involve parent volunteers in activities by having them lead sessions, serve refreshments, do administrative tasks.
3. Don't focus solely on changing parental behaviours. Seek changes in public policy, social norms and allocation of economic resources. Organize inservice sessions for school staff.

4. Identify specific barriers to participation such as travel, weather and hours of operation. Consider public transportation routes and times. Organize carpools. Offer baby-sitting services with student volunteers.
5. Offer different forms of involvement to parents, individual and collective, ranging from receiving information to participating in decision-making.
6. Affirm the importance of family and parents through public awareness campaigns. Communicate with parents in a variety of ways including mailings, telephoning, etc. Involve students in the process and ask them to tell their parents about the activities.
7. Shape public policy to support families and the role of parents in health promotion. Encourage parents to join advocacy groups and service organizations.
8. Implement programs with consideration of parents' needs and convenience. Include social aspects.
9. Link parent education with community education and awareness programs.
10. Advocate for a continuum of family services by linking parent-education with support services, social support and a healthy physical environment. Invite community agencies and organizations to participate in planning events.

The Rationale for Involving Parents in Health Promotion

Rothwell (1992) examined the different forms of parental involvement. Her review indicates that properly planned programs result in greater student achievement and more support for schools. She also concluded that parental involvement can help to compensate for socioeconomic differences and that school personnel can assist parents to be more effective in supporting their child.

The research on the effectiveness and benefits of parental involvement in governance through advisory committees is mixed (Lucas & Lusthaus, 1981; McCall, 1980). However, researchers such as Fullan (1991) suggest that parent councils are effective when they have a clear focus and sound organization. Durkin & Kingdon (1995) lay out the conditions favouring a successful parent council. They include a real commitment to parent involvement, leadership from the school principal, an emphasis on trust, training for all participants, accurate information and extensive efforts for broadly-based involvement.

Valpy (1995) has suggested that one of the best recommendations of the recent Ontario Royal Commission on learning was the creation of school-community councils. He suggests that such councils could become the "village educating the child", thereby providing a variety of resources and support services. However, we did not locate any study that examined the impact of involving such councils in prevention.

Reaching At-Risk Families

Liontos (1991, 1992) has been prominent among researchers studying how parents of at-risk students can be involved in schooling. She suggests that the obstacles can be overcome by: not assigning blame; building on family strengths rather than trying to correct for deficits; building trust; helping parents learn new techniques; recognizing cultural differences as valued and valuable; respecting the

many different forms of families; asking parents first what they are interested in, and creating partnerships with community agencies.

Parent Involvement In Prevention

Research on the effectiveness of parent programs to prevent health and social problems is at an early stage. Although the rationale for involving parents is solid (Mangham, 1992), several reviewers (Dembo et al, 1985; White et al, 1992; Tobler, 1986; Bangert-Drowns, 1988) have concluded that the results are inconclusive. This may be because of poor design of parent programs resulting in the exclusion of at-risk parents; not coordinating parent education programs with other health, social, employment training and housing services; and poor implementation of programs (CASH, 1992).

Powell (1990) reviewed the research on parent education and support programs as well. Positive effects of intensive, early childhood education programs included enhanced child competence, maternal behaviours and several family characteristics. The success of these programs depended upon the number of contacts with families and the range of services offered to the families. Successful programs were characterized by collegial relationships between parents and staff, a balanced focus on the needs of the child and the parent to create supportive social networks, tailoring programs to specific groups of parents and allocating significant program time to open-ended discussion.

Researchers are now reporting case studies of parental involvement in prevention programs. They are also beginning to construct theories to explain why parents become involved or choose not to participate.

Hahn et al (1996) used the Health Belief Model (HBM) to guide their examination of parent involvement in a school-related drug prevention program for very young children. HBM suggests that people will take action to prevent health problems based on:

- the perceived barriers and benefits
- cues to action derived from their environment
- the perceived threat
- their demographic, socio-psychological and structural situation.

They concluded that parents become involved when certain cues are received. These are: their children's enthusiasm, transportation, child care and other incentives, positive attitudes from school personnel, a combination of communications strategies and having multiple channels for their participation.

Brock & Beazley (1995) also use the Health Belief Model (HBM) to explain parents' decisions to participate in at-home learning activities in a grade nine AIDS/HIV and sexuality education program. They found that 44% of the 100 parents who responded to the survey reported that they were either moderately or highly involved in the five at-home activities. The authors noted that 20% of the parents never received a guide from their children. They recommend a variety of communication strategies to ensure that parents are informed of the existence of the activities including direct mail, adaptation of materials to lower literacy levels, use of local media, cooperation with parent councils and a covering letter from the principal.

Hearn et al (1992) reported that 75% of parents of 4th grade students participated in at-home learning activities relating to cardiovascular health. Parents reported positive changes in some nutrition habits, physical activity and role modeling as a result of the combined at-home and classroom program. Parents with lower socio-economic status did not participate or benefit as much, thereby requiring specific attention in programming.

Werch et al (1991) reported on the effects of a take-home drug prevention program using at-home correspondence and other activities. 90% of mothers reported helping their children complete at least one-fourth of the materials. Parent-child communications had no apparent impact of children's intent to experiment with drugs. The authors recommended changes in program messages and content.

Perry et al (1990) studied parental involvement in a smoking prevention program for students in grades four to six. 95% of the parents participated in the program, with the child initiating the activity in the vast majority of cases. Behavioural impacts were restricted to parents who were smokers reporting that they intended to quit. Family discussions about smoking definitely increased as a result of the program.

Williams & Kubik (1990) reported the impact of a community, parent and school effort in nutrition education. The combination of parental involvement, classroom instruction, staff wellness and community coordination.

Nader et al, (1989) reported that a family-based heart health program was able to change eating habits but not physical activity patterns.

Cohen et al, (1989) review the results of a combined peer-parent program in heart health. The combined intervention led to changes in eating habits, tobacco use and blood pressure. The evaluation was done over a three year period.

Perry et al, (1989) and Crockett et al (1989) have examined the behavioral impact of involving parents of third grade students in at-home learning activities that complemented the classroom instruction. The students that had home-based activities were compared to those with just the classroom instruction. The results showed that home-based learning with instruction had a significant effect on nutrition habits.

Fors et al, (1989) compared the effect of a selected instructional program on heart health. It combined the same program with parent activities with their children at home and the school district's regular health education program. The approach involving parents had a more powerful effect on student blood pressure knowledge and skills.

Perry et al, (19--), assessed the impact of a home learning activity program for the parents of pre-adolescents. The program created an opportunity for parents to discuss smoking with their children.

Brannon et al, (1989) report that a combination of parent, TV and classroom instruction was able to involve students in discussions with their parents and to gain wide participant acceptance.

Simons-Morton et al, (1984) reported that a combined instruction, parent and media program was able to influence the snack choices of third and fourth grade students, at least for period of up to eight weeks. However, the effect of the combined interventions declined after that time period.

Crockett et al [246] have also tried to help us understand how parents can become involved in nutrition education. They summarize selected research about the impact of youth directed nutrition education interventions on parents. A conceptual model is proposed to guide the development and evaluation of future interventions with a parent component.

This review has identified several case studies of parents being educated or involved in nutrition and other health issues. A review done for Health Canada identifying innovative practices [247], describes an example from Waverly, Nova Scotia. A parent's committee has been leading school efforts to promote nutrition health. Perry et al [248] examine the impact of parent involvement with a children's heart health promotion Project in Minnesota. The authors conclude that the application of this behavior model places emphasis on skills and behaviors and was effective in improving the nutrition habits of the students. In another example, identified in the Health Canada review of innovative practices, students and parents helped the school improve its nutrition status. [249] This program uses community development strategies and begins with the needs identified by parents and students.

Johnson et al [250] describe another behavioral model combining parent education and nutrition counseling. In this program parents were offered eight 90 minute sessions and three counseling sessions over 12 weeks. Results indicate changes in the nutrition and eating habits of the students. Cohen et al [251] report on the combination of the efforts of parents with older peers in a school-based cardiovascular disease prevention program. These parents and this project indicates that it is more effective to ask families to undertake activities such as shared preparation of meals rather than doing homework or answering questions.

Two other examples [252, 254] examine the perceptions of adolescents girls and adolescents regarding their parent involvement and parent nutrition styles. Soldano & Markell [253] used the National Standards for Family/Parent Involvement issued by the Parents Teachers Association in the United States to involve parents in the issue of adolescent immunization.

Leitza [255] describes the process of involving parents in the design, implementation and evaluation of an eat smart educational program. Johnson et al [256] report on parent involvement for cardiovascular intervention with high-risk families as part of the Heart Smart Program. Both children and parents showed positive changes in habits and physical activity as well as significant changes in knowledge and BP levels. The children involved also halted their weight gains. Hopper et al [257] examined the effect of including parents in a school-based exercise and nutrition program for children. The results indicate that including the family was primarily effective in improving children's nutrition knowledge rather than changing diet or exercise behaviors.

Preventive Health Services Delivered in the School

This section of this paper examines the preventive health services that can be delivered effectively in the school setting. Such services include the role of the public health nurse, the physician, and the nutritionist. This sections begins with a general discussion of the effectiveness of such services. Then three particular aspects of preventive health services including; screening, the feedback to individuals about nutrition practices and school-based health clinics are examined. In the next section the role of the public health nurse will be discussed.

Reif & Elster [258] suggest that primary care providers, such as family physicians, are in an excellent position to provide teen preventive care that is comprehensive and specific to the needs of each young person. There is an example of this [259], taken from the Health Canada review of innovative practices which reports on another type of preventive health services where parents students and teachers are encouraged to participate in nutrition education through a health contest. King et al [260] report on the impact of such preventive health services in promoting dietary change in adolescents. The results indicate significant changes in reported behavior, knowledge and food availability at home, as well as changes in snack choices at school. The changes were found to be durable at a one year follow-up. Brannon et al [261] examined the cost effectiveness of preventive

health services in the school setting. They conclude that modest reductions in fat consumption and in plasma lipid levels were cost-effective in comparison with treatment costs of elevated cholesterol in adulthood. Yaffe [262], writing in the *Canadian Family Physician*, has described the opportunities for family physicians to expand their involvement in child and adolescent health in the school setting. Such involvement should be collaborative and reflective of community interests and needs.

Our findings related to screening of adolescents for heart disease in the school setting indicate that this preventive health service can be effective. Resnicow et al [263] report on a school-based cholesterol reduction intervention to primary grade students in two New York City public schools. 34 students completed the five session behavioral group intervention. Cholesterol levels decreased 6.6 percent in students participating in the program. Bestagini et al [264] review the impact of five years of screening for blood cholesterol levels in schools in Italy. Resnicow et al [265] report on the experience of four Michigan elementary schools who received a cardiovascular risk factors training intervention over two years. This study suggests that risk factors training programs can positively influence the knowledge, attitudes and behavior of school children and their parents.

Cowell et al [266] report on a cardiovascular risk assessment program using a school and community partnership. The purpose of this study was to identify changes in cardiovascular risk factors in sixth grade students over eight years. The program was operated by the local health department in cooperation with the school district. The results indicate that this screening process was needed to target the students who were at higher risk, complementing the more general messages being delivered in health education classes. Baer & Harris [267] report on a screening process used by a nutritionist in the school setting.

O'Loughlin et al [268] reports on a Montreal example where this training program was done for school personnel. The results indicate that screening and counseling for cardiovascular risk factors is an effective strategy to influence the level of physical activity. There is also some potential for such changes among teachers to become a role model or more efficient educators of students in heart health. Blum et al [269] remind us that screening programs need to be adapted to the specific concerns of adolescent girls in boys. If "we don't ask, they won't tell" is the primary message of this case study.

Freedson [270] examines the effectiveness of using technological aids to monitor health and nutrition status. Self monitoring is often used in health behavior change programs but it is not known to what extent self monitoring data are useful in predicting changes in cardiovascular disease risk. Malsen et al [271] examined the impact of 18 sessions of family-based nutrition counseling giving such feedback. This study provided some support for the predictive validity of diet self-monitoring in adults and exercise self-monitoring in children. Ambler [272] found that a similar feedback program in exercise training found no effect on eating habits. Valverde et al [273] report on a feedback program with obese children and adolescents and found that the good outcomes can be obtained in such a program as long as it was focused on small modifications creating habits in order to avoid excess energy intake. The best predictors of weight improvement were higher frequency visits and shorter intervals between them. Resnicow et al [274] reported on a program of self-monitoring in food intake and goal setting with children in the school setting. The results show significant reductions in the cholesterol level of participating students.

School-based health centers have been discussed extensively in the research literature on school-based health promotion. It is beyond scope of this paper to discuss them fully here. However, we will provide a couple of examples where this strategy has been applied to nutrition and other health issues. Kalafat & Illbeck [275] did a qualitative evaluation of school-based family resource and youth service centers. These centers were introduced as part of the Kentucky Education Reform Act. The

experience from this series of studies could form the basis for developing effective nutrition interventions in school-based health centers. Joost et al [276] suggest that disproportionate use of school health rooms can be predicted on the basis of product health diseases such as obesity. They found that such students are more likely to use school-based health clinics. This implies that such centers may be a means of reaching such high-risk groups. Keyl et al [278] found that school-based health clinics need to be actively promoted to make their operation and services known to students and their parents. Jasaitis [279] suggests that school-based health clinics can play a role in nutrition. Direct nutrition care in a school-based health clinic, school meal programs and supporting nutrition education in classrooms can be the role of professional dietitians or nutritionists. McCord et al [280] report that school-based clinics can have a positive impact on school academic performance of students.

The Role of the Public Health Nurse

The public health nurse can be an important element in a school-based nutrition strategy. Nurses can assess the needs and resources available for nutrition health promotion, survey students to identify their nutrition concerns, help teachers in identifying nutrition education resources and strategies, refer students to nutritionists for counseling and information, organize nutrition related extracurricular activities in the school, inform and involve parents in nutrition education, and coordinate activities of the entire school in nutrition health promotion. Once again, there is a considerable amount of research on the school-based role of the public health nurse and it is beyond the scope of this paper to describe that role in detail. However, some case studies that have nutrition related implications will be referred to.

Neylon [281] suggests that the public health nurse should conduct health interviews with individual students as a general health screening practice. This could include nutrition related concerns. Jones & Clark [282] reviewed the functions of school nurses. They found that student absentee data and use in a preventive health services are important measures supporting the importance of such school health programming by public health nurses. Bradley [283] also suggested specific roles for the public health nurse to play in the school setting.

Carleton et al [284] reported that public health nurses working in schools are an important part of the Pawtucket Heart Health Program. This program was successful in influencing adolescent eating patterns. Janas & Hymans [285] reported on the perceptions of school nurses in New Jersey on prenatal nutrition education. A majority of these nurses indicated their personal interest in providing new nutrition education.

School Food Services

Heart health messages can obviously be delivered within the context of school-based food services. There are several sources of guidelines and overviews of effective school food services. The BC Ministry of Health has produced one of these guidelines titled School Food: Getting Students a Better Break [286]. The booklet provides a comprehensive set of suggestions presented in a practical format. The United States Department of Agriculture has provided a more comprehensive leadership booklet for school decision-makers [287]. This guide suggests strategies for linking school food services to the classroom. The guide also includes tips on getting results in the cafeteria, school environment, reaching families, in the community and in the media.

The Ontario health ministry produced a review of the research available on school food services [288]. Although this reference is somewhat dated, its findings are still relevant today. An earlier document [289] also prepared guidelines for school food programs from a federal-provincial

Nutrition Committee sponsored by Health Canada. The American School Food Service Association [290] did a background and issues paper on school food services in 1977. This review covered the school lunch program, school breakfast program, milk programs, child care programs, summer food services, nutritional training and education for food services staff, nonfood assistance, and special supplemental food programs. This report sketches out the potential scope of some the activities of the school food service program.

This review identified two specific references relating school food services to cardiovascular and nutrition health. Ellison et al [292] examined the impact of food service programs in boarding high schools and demonstrated that changes such as food purchasing and preparation, decreased sodium and fat composition of foods and that they had a significant impact on the nutrient intake of students. Frank et al [293] described the school food service program as part of a comprehensive school-based program.

Also identified were several other case studies where school-based food service programs have had a positive impact on the eating habits of adolescents and children. Michel et al [294] compared the food service offerings of two schools in Quebec; one managed by a nonprofit organization, and the other operated by a traditional food service company. Both schools food service programs fell short of dietary recommendations, but the nonprofit operation appeared to favor a healthier diet. Olds [295] examined the impact of offering a nutritious snack to students in vending machines. The study showed that students having access to vending machines in their schools had more negative attitudes and behaviors regarding weekly snack choices than students without access to vending machines of school. However, students who attended schools that had vending machines with nutritious snacks ate those snacks more often than those students who did not have the choice. Consequently, the researchers concluded that poor snacking behaviors may relate to more directly to the choices offered in the vending machine than having these machines on site in the school. Brannon et al [296] examined the impact of providing nutrition education to children who are at high-risk of heart disease. The study found that such nutrition counseling, offered into different formats, was able to modify eating habits and was cost-effective.

Other case studies supported the use of the school food service as a strategy. The Exeter-Andover Project [297] involved the training of food service personnel and purchasing agents to prepare foods in a healthier way for grades 9 through 12 students. The intervention resulted in 15 to 20 percent less sodium intake of students and all students showed lower blood pressures than controls. Preston et al [298] found that different states in United States were generally compliant with U. S. dietary guidelines even though their menus varied significantly.

School Meal Programs

Pateman et al [299] examined school food services in a more recent article [1995] for the Centers for Disease Control. Snyder et al [300] showed that a healthy school lunch program providing tasty food choices lowered fat and sodium intakes. The program was implemented in 34 elementary schools in Minnesota and the impacts included a 39 percent decrease in the total fat in the lunch menu and changes to lower salt in the diet of students. Student participation in school lunch program remained stable. Hanes et al [301] found that students participating in school breakfast or school lunch programs benefited from healthier dietary intake.

Whittaker et al [302] reported on a program to reduce the dietary fat in lunches. The intervention consisted of offering healthier food choices in the cafeteria. Many students, when given a choice, selected low-fat entrees. The dietary recommendations for fat were achieved simply by increasing the availability of low-fat foods. Chapman et al [303] examined the factors associated with schools

offerings that were providing different amounts of fat. Burghardt et al [305] summarized the key findings of the School Nutrition Dietary Assessment Study and discussed implications for national school lunch programs and the school breakfast program in United States. Reducing total fat offered in these new programs would be facilitated by changing the legislative requirement to serve homogenized milk. Other changes were recommended to the dietary guidelines for such programs.

The BC Ministry of Education [303a] has published a guide on school meal programs that includes the rationale, standards, procedures and suggestions for working with the community.

Extracurricular Activities Promoting Heart Health

The Heart and Stroke Foundations often operate two programs that fall into this category with schools. Jump Rope For Heart and Heart Smart Kids. Both offer extracurricular activities for students to promote cardiovascular health. Specific evaluations were not found in the published literature of these two programs, but presumably these assessments have been done by the Foundations. Altman et al [306] examined factors that influence youth participation in heart disease prevention activities among ninth graders in six inner city public high schools. Perceived incentive value, self efficacy, expectations about outcomes, sense of community and perceived policy control were all significantly associated with participation in these community and school activities. Goldberg et al [307] found that an adolescent training programs offered after school can help students to avoid health risks such as steroids.

School Meal Programs

Two documents were found that provide a general review of school meal programs. The School of Nutrition at Tufts University [351] shows the link between cognition and nutrition and then goes on to describe the role of several key nutrition programs for children in the United States. These include the special supplemental food program for women, infants and children [WIC], school breakfast programs, school lunch programs, the summer foods service program and the food stamp program.

The National Institute on Nutrition, [352] in a special issue of their Journal, Rapport, did an overview of school-based school meal programs. This report examines issues such as cultural influences, front-line problems, school food policies, and the role of the food industry. The report emphasizes the value of having a good breakfast. The report states that lunch programs contribute most towards total nutrient intake and growth, while breakfast programs lead to greatest educational yields. Healthy snacks in assist cognitive and social functioning.

A 1989 survey of school board nutrition policies and programs for hungry children [354] has already been discussed in this paper. This report from the Canadian Education Association concludes that school meal programs will contribute to the education of students and may become a permanent feature of school systems across Canada.

Sampson et al [355] have tried to determine whether or not parental perceptions about school breakfast programs are associated with participation among low income children. The researchers found that there were some cultural influences and the parents of participating children felt that the school breakfast program would save them time, energy and family food money.

The Health Canada review of innovative nutrition practices found five examples of school meal programs [356, 357, 358, 359, 360] Dywer et al [361] examined the effect of the CATCH Eat Smart

Program on the nutrient content of school breakfasts. The study found that the Eat Smart food service intervention improved school breakfasts composition, but not significantly more so than the control schools. The study mentioned the possibility that the controls goals were also affected by the intervention. A similar review [362] done by Osganian et al found that the CATCH Eat Smart Food Service Intervention successfully lowered the total fat and saturated fat content of school lunches offered. These two studies indicate the school meal programs can indeed be healthy. Osganian also [363] reported on the government funded school meal programs across the United States and found that the dietary content of such programs was lacking. Dywer et al [364] found that the interventions to change the quality of food in school breakfast programs did not affect student participation in those programs. Gordon et al [365] showed that the total amount of dietary intake was not changed by changes to make school meals healthier.

School-based Peer Programs

There is a considerable body of evidence on impact of school-based peer helper programs, the magnitude of which is beyond the scope of this paper. The Canadian Association of School administrators [366] has summarized the research on such peer programs. Quoting Ray Carr from the BC Peer Resource Center, this document has summarized the functions of such peer helpers as:

- tutors, helping others with academic and social learning
- buddies, helping new students or students with special needs
- orientation guides, helping students learn about school services
- discussion leaders, assisting experts in communicating the students
- career assistance, helping students set goals
- referral agents, helping students connect with experts
- peer counselors, listening to others to sort out their concerns
- role models, helping other students learn behaviors
- outreach workers, reaching out to troubled and lonely students

The summary document also described the essential elements of a peer helper program:

- 1.The program must be led and supervised by an adult who is trained and experienced in peer helping.
- 2.The program consists of training sessions, a tested curriculum-based on student needs.
- 3.The training environment encourages enjoyment, involvement and skill development.
- 4.Students selected as trainees must feel the training is special and trainees must represent the social composition of the community in which they will be working.
- 5.The training methods must emphasize interactive components and feature applied activities.
- 6.The training program and the roles of the peer helpers must have a broad base of support from teachers, administrators, parents and other students.
- 7.The trainees must have ongoing supervision and learning opportunities.

This summary, although somewhat dated, provides a review of the research. It shows the impact of peer helper programs use in a variety of settings within the school towards a variety of purposes and program goals.

The Fly Higher Program of the Heart and Stroke Foundation of Ontario [367] is an example of a peer-led program The interim report found in our review also identified several lessons that can lead to the success of these types of programs.

Our review found one specific example of a peer program aimed at changing adolescents use of sugar in a learning by teaching approach. The study [368] found a significant drop in the level of sugar intake from pretest to post-test.

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