



Supportive Environments for Learning: Healthy Eating and Physical Activity Within Comprehensive School Health

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Within Comprehensive School Health

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Foreword from Health Canada and the Public Health Agency of Canada

The Office of Nutrition Policy and Promotion at Health Canada and the Centre for Health Promotion at the Public Health Agency of Canada (PHAC) are pleased to have supported the development of this special supplementary issue of the Canadian Journal of Public Health on school health, in collaboration with the Joint Consortium for School Health (JCSH). This supplement profiles the importance of advancing healthy eating and physical activity policy within a broader comprehensive school health framework and highlights examples of Canadian and international action. It is intended to stimulate discussion for action and further research on healthy eating and physical activity to improve the health and well-being of children and youth within the school setting.

The collection of seven articles is the culmination of work by 13 Canadian and international experts in the fields of physical activity, nutrition, education and comprehensive school health. These articles include key findings from scientific background papers produced in 2008, which provided the evidence to inform the development of the World Health Organization's (WHO) School Policy Framework.¹ PHAC, Health Canada and the JCSH worked in collaboration with WHO to support the development of this framework as one of the tools for implementing the Global Strategy on Diet, Physical Activity and Health (DPAS).² In Canada, the JCSH has endorsed and promotes a Comprehensive School Health Framework, which supports the implementation of DPAS across its member jurisdictions.

Healthy eating and physical activity are influenced by many factors, including economic and social factors, the physical environment, as well as the time, skills and capacity to make healthy choices. Given the role these factors play in children's lives, schools are recognized as a key environment for supporting healthy eating and physical activity in children and youth.

This supplement summarizes the state of knowledge on policy options to support healthy eating and physical activity in the school setting; describes roles of stakeholders; and provides an overview of monitoring and evaluating implementation of school policies. It also outlines where further research is needed to strengthen the evidence base to inform future programs and policies. The articles are intended for use by academics, policy-makers, public health practitioners and education specialists in both the health and education sector.

Significant efforts are underway, both in Canada and internationally, to support healthy eating and physical activity within the school setting. This supplement makes an important contribution to disseminating knowledge on policy options that support healthy eating and physical activity in schools. However, more work needs to be done to highlight knowledge gaps and the importance of supporting research, particularly in Canada, to determine the effectiveness of comprehensive school health efforts. Collaborative efforts, across health and education sectors, are key factors to strengthening our knowledge base to improve the health of Canadian children and youth.

Hasan Hutchinson, PhD

Director General, Office of Nutrition Policy and Promotion, Health Canada

Sylvain Segard, BSc, MRM

Director General, Centre for Health Promotion, Public Health Agency of Canada

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Foreword from the Joint Consortium for School Health

The Joint Consortium for School Health (JCSH) is pleased to have collaborated with Health Canada and the Public Health Agency of Canada (PHAC) on this special supplement to the Canadian Journal of Public Health on the topic of school health. The articles that follow are yet another step towards advancing healthy living for children and youth through an integrated, collaborative and evidence-based approach to promoting healthy eating and physical activity.

Each of the articles in this supplement highlights one or more components of comprehensive school health (CSH) – an internationally recognized approach that is championed in Canada by the JCSH. Recognizing that effective, sustainable progress in CSH depends on cross-sector and cross-jurisdiction collaboration, the JCSH has endorsed a Comprehensive School Health Framework that policy-makers and practitioners in health, education and other sectors can use to guide and coordinate their work.

Like the World Health Organization's School Policy Framework, the CSH Framework supports the implementation of the Global Strategy on Diet, Physical Activity and Health. It addresses issues such as the differences in language used across jurisdictions and underlines the need to focus on common goals, approaches and principles, allowing partners to pool resources and develop action plans together with, and in support of, schools.

The JCSH itself is an example of collaboration in action. Members include key health and education representatives from governments at the federal, provincial and territorial levels, working with a common vision towards the following shared goals: to promote understanding of, and support for, the concept and benefits of comprehensive school health initiatives; to build system capacity for promoting health through school-based and school-linked programs; and to be a catalyst for collaborative activities.

The articles that follow are in keeping with these goals. They provide an opportunity for comprehensive school health practitioners to draw from the growing body of evidence and to build cross-sectoral partnerships by sharing and learning from one another's challenges and successes. They also provide a clear understanding of where further research can be focused to build a stronger base of support for effective CSH approaches.

Finally, this supplement serves as a reminder that comprehensive school health is very much a work in progress. Even with the efforts of researchers worldwide, and the experience of front-line practitioners, there is still much to learn and much work to do in this emerging area of public policy. That is exciting. It means there are still many more opportunities to work together to improve the health, education and well-being of Canada's children and youth, and to help build a stronger, healthier society for the future.

Linda Lowther, BA, MEd

Chair, Joint Consortium for School Health Management Committee

Comprehensive School Health in Canada

Paul J. Veugelers, PhD,¹ Margaret E. Schwartz, MEd²

ABSTRACT

The Canadian education system is among the best in the world academically. In contrast, students' (children and youth) eating and activity levels are so poor that they have led to prevalence rates of overweight that are among the highest in the world. Given the enormous public health burden associated with poor nutrition and physical inactivity, Canada needs to address this health risk. Comprehensive school health (CSH) is a promising approach to promoting healthy eating and active living (HEAL). This article provides a review of CSH and discusses its four essential elements: 1) teaching and learning; 2) social and physical environments; 3) healthy school policy; and 4) partnerships and services. It also provides a common understanding of the implementation and broader benefits of CSH, which, in addition to health, include student learning and self-esteem. The article further discusses some complexities of a rigorous evaluation of CSH, which comprises proof of implementation, impact and positive outcome. Though such an evaluation has yet to be conducted, some studies did confirm successful implementation, and another study observed positive outcomes. Rigorous evaluation is urgently needed to provide a stronger evidence base of the benefits of CSH for learning, self-esteem and disease prevention. This evidence is essential to justify devoting more school time to promote HEAL and more resources to implement and support CSH to the benefit of both learning and health.

Key words: Schools; Canada; public health; education; health promotion; health policy

Schools have the mandate to deliver education. This may include health education delivered through subject areas, like science, or through specific health courses and physical education.^{1,2} Students may learn effectively and may demonstrate learning of the acquired facts. However, the impetus for students to change their behaviour requires a more comprehensive approach that involves parents, community and stakeholders, and includes supportive policies, programs and environments.³⁻⁵ Such an approach to health promotion in schools is referred to in Canada as comprehensive school health (CSH). This is synonymous with the term Health Promoting Schools (commonly used in Europe and Australia) or Coordinated School Health (used in the United States).

Health promotion in schools has been developing and evolving over several decades and seems to be gaining renewed interest in light of the obesity epidemic.^{5,6} Changes over the past 25 years have refocused health promotion in schools from an individual, behavioural approach to providing supportive social and physical environments.^{4,7-9} In 1985, the *Ottawa Charter for Health Promotion* provided the framework for CSH, which is currently implemented in over 43 countries around the world.^{4,6,9}

Schools are widely acknowledged as an appropriate and logical setting in which to promote healthy behaviours.^{6,8-11} They provide a setting in which to deliver health information to both the student and, indirectly, the home and community.¹²⁻¹⁴ During their school years, students develop health habits through what they learn and through the health choices they can make in their school environment. These health habits acquired at a young age may lead to lifelong healthy behaviours. Therefore, CSH is essential to public health, as it has great potential to contribute to child health in the short term and chronic disease prevention in the long term.

Various descriptions of CSH exist. Although they all include the concepts of being multifaceted, planned and intersectoral, they vary with respect to contextual detail. Descriptions of CSH also vary

in perspective: those by governments may emphasize the role of policies, those by community members may emphasize partnerships, and those by school staff may emphasize teaching and learning. For the purpose of this article, we will use the definition provided by the Joint Consortium for School Health (JCSH):¹⁵

"Comprehensive school health is an internationally recognized framework for supporting improvements in students' educational outcomes while addressing school health in a planned, integrated and holistic way."

This article provides a review of CSH specific to the promotion of healthy eating and active living (HEAL) in Canada. It further provides some common understanding of the implementation and broader benefits of CSH for students and schools, as well as suggestions for future research to augment the evidence base of the public health benefits of CSH.

Essential elements of CSH

The JCSH identifies four pillars for CSH: 1) teaching and learning; 2) social and physical environments; 3) healthy school policy; and 4) partnerships and services.¹⁶ Elements of each pillar need to be implemented to realize CSH.

Author Affiliations

1. Professor, Department of Public Health Sciences, School of Public Health, University of Alberta, Edmonton, AB

2. School Health Manager, School of Public Health, University of Alberta, Edmonton, AB

Correspondence and reprint requests: Paul J. Veugelers, PhD, Department of Public Health Sciences, School of Public Health, University Terrace, #6-50 8303 112 St., Edmonton, AB T6G 2T4, Tel: 780-492-9095, Fax: 780-492-5521, E-Mail: paul.veugelers@ualberta.ca

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Teaching and Learning

Schools are the vehicle in society for providing education and preparing students to become productive citizens. As healthy citizens are more likely to be productive citizens, health education should be an integral element of education.

Each province/territory in Canada develops its own curriculum to meet the needs of its students. Provincial/territorial governments aim for curricula that are developmentally appropriate, equitable, sequential and holistic. To date, however, there is little documentation or assessment of student achievement related to health curricula. Teachers in Canada are well qualified to provide high-quality learning experiences. However, not all Canadian universities require mandatory course work in health education, physical education or CSH as part of their teacher education programs. Therefore, it is important that professional development be provided for those teachers who do not feel qualified or comfortable teaching health-related subject matter, such as nutrition and physical education, in order for them to contribute to good health education.^{4,12}

Social and Physical Environments

A school that supports HEAL is often recognized as such when one walks through the door and finds displays of HEAL-related messages, various activity spaces that will allow students to be active, welcoming spaces in which to eat snacks and lunches, and access to nutritious foods for all students.

The social environment is also important to CSH. A school community that engages its students in the development of programs and provides equitable opportunities for all students will increase the sense of engagement in the learning environment and thus increase health.^{17,18} Positive peer support programs have reportedly been successful in improving the school's social environment and creating positive attitudes among students.¹⁸ Positive students are not only more likely to make healthier choices, they are also more likely to respect their surroundings, which further contributes to a positive social environment.¹⁸ Peer-led intramurals, student cooking classes, student leadership programs and refreshment stands organized by students are further examples of ways to engage students in HEAL activities and build on the social environment.

A successful CSH program in Nova Scotia uses the message of "the healthy choice is the easy choice" to frame its expectations of school environments.

Healthy School Policy

Most Canadian provinces and territories have established school nutrition policies or guidelines. Policies can apply at the provincial or territorial level but also at the school district or school level and can be as simple as a classroom teacher deciding to no longer use candy as a reward for good behaviour.

Policies that support health in schools are a cornerstone of all CSH models. It is essential in CSH that policies be developed, implemented and tailored to capture the school-specific context, ideologies, cultures and priorities.¹⁴ Participation by students, staff, parents and other stakeholders in the development and implementation of policy is essential. Further, considerations of new policies in CSH schools should be driven by the desire to serve all school participants. Most Canadian provinces and territories have currently implemented nutrition policy or guidelines for schools,

and several provinces have implemented daily physical activity or physical education for kindergarten to Grade 12. These policies strongly support HEAL behaviours, but to date few investments have been made to determine the effectiveness of the HEAL policies.

Partnerships and Services

The JCSH lists Partnerships and Services as the fourth pillar of CSH. Partnerships can assist schools in using community facilities and resources to provide more opportunities for HEAL-related activities for students. The services aspect includes health services that may be vital to students with specific health needs or who require assistance. Allowing access to the school facilities after or before school hours increases not only community facility usage, it also engages health professionals in a meaningful way in the school community.

Involvement of parents and peers has demonstrated positive health results, particularly in areas related to healthy eating and active living.^{4,6} Parents are key partners in the planning, implementing and tailoring of CSH. Improved partnerships with health authorities may improve the quality and quantity of their health services. For example, if a school is implementing a hot lunch program, its staff can work with public health dietitians or nutritionists to ensure that the food meets Canada's Food Guide and provincial/territorial policy.

Partnerships are typified by meaningful dialogue, transparent decision-making and collective agreements on policies, guidelines and strategic planning.¹⁸ It is the act of engagement of partners that allows the community to develop, become sustainable and increase its capacity to meet the needs of all its members.

Implementation of CSH

Canadian schools differ in their objectives, leadership, enrolment criteria, curricular demands due to language or religious instruction, socio-economic factors, physical structure and community support. A standard protocol for implementation of CSH is therefore not feasible. Implementation protocols are consequently not detailed but generic instead. They necessitate tailoring to the needs of individual school communities. Various organizations, including the Canadian Association for School Health, the JCSH and the Public Health Agency of Canada, provide information resources and supportive tools to assist this tailoring process.¹⁹⁻²¹ Such resources include planning tools – for example, the Annapolis Valley Health Promoting Schools Program works with Innovation Configuration maps (IC maps or "I see" maps) as a planning tool. IC maps allow one to score the extent to which components of each of the essential elements of CSH are implemented. Periodic IC maps provide a visualization of the implementation process ("I see" maps) that allows judgement of progress and priority setting regarding next implementation steps.

Benefits of CSH

Schools that provide supportive physical and social environments, as well as high-quality health and physical education, have been shown to have positive effects on fostering healthy lifestyle habits.^{14,22-24} Where these actions are sustained, they will lower the risk of overweight and chronic diseases, improve quality of life and avoid future health care costs. Students attending CSH schools have

been shown to have more healthy eating habits, to be more active and less likely to be overweight.^{5,25}

Less well documented and known are the benefits of HEAL for academic performance.²⁶ Canadian children with healthier diets were reportedly 30% less likely to fail their provincial achievement tests.² Other Canadian studies have shown that cutting back on time for classroom learning to make space for more physical education did not affect students' academic performance, suggesting that there are beneficial effects of physical education on learning.^{24,27} These important observations justify more time being spent in school on the promotion of HEAL, as it is beneficial to both health and learning.

The benefits of promoting HEAL extend to self-esteem, an early indicator of mental health later in life. Canadian children with healthier diets and higher activity levels had reportedly better self-esteem.^{28,29} These studies also confirmed the positive effect of HEAL on healthy body weights and good academic performance, both of which were found to improve self-esteem independently.

The benefits of CSH for learning and self-esteem have yet to be evaluated but are expected to exceed the combined effects of healthy eating and active living.³⁰ Other benefits of CSH that have been reported include the strengthening of family and other relationships, equity in education and health, and better school ethos to support HEAL.^{5,6,9}

Evaluating CSH

Evidence-based decision-making is fully developed for clinical interventions: new drugs and procedures are subjected to clinical trials to establish both efficacy and safety prior to marketing and implementation. In contrast, evidence-based decision-making in public health, and particularly population health, interventions such as CSH is in its infancy. Where clinical evidence tends to be universal and biological in nature, evidence for population health interventions is context specific and consequently in continued need of replication. Where clinical evidence focuses on outcomes, evidence for population health interventions should cover each of the following three areas:³¹

1. To what extent is CSH successfully implemented? Are advances made for each of the four essential elements of CSH?
2. What is the impact of CSH? Has its implementation demonstrated improvements in knowledge, and changes in attitudes and behaviours?
3. What are the improvements in terms of outcomes? Are students eating more healthily, being more active and have they healthier body weights?

One may establish the effectiveness of CSH when an evaluation confirms implementation, impact and positive outcomes. Rigorous evaluations have yet to be conducted and published for CSH, although some studies have confirmed implementation,^{4,6} and another showed positive outcomes.⁵ Confirmation of implementation generally makes use of qualitative methods and existing planning tools, such as the IC maps described earlier. Quantitative methods are most appropriate for demonstrating impact and outcome. Though an evaluation of CSH is time and resource intensive, it is essential to the identification of best practice, to informed public health decision-making and to justification of broader implementation of CSH.

In summary, the Canadian education system is among the best in the world academically. In contrast, eating and activity levels

among children and youth have led to prevalence rates of overweight that are among the highest in the world. CSH is a promising approach to promoting HEAL. Rigorous evaluations of CSH are urgently needed to provide a stronger evidence base of the benefits of CSH for learning, self-esteem and disease prevention. This evidence will help justify devoting more school time to promote HEAL and more resources for CSH, to the benefit of both learning and health.

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Policy Options to Support Physical Activity in Schools

François Lagarde, MA,¹ Claire M.A. LeBlanc, MD, FRCPC²

ABSTRACT

Rates of child and youth obesity and associated chronic diseases are rising worldwide, in part as a result of inadequate physical activity (PA) levels. Environmental change is needed in multiple settings to encourage the adoption of healthy lifestyle behaviours at an early age. Schools are an ideal setting in which to incorporate a variety of interventions in order to improve student PA levels and healthy eating environments. This paper reviews effective and promising policies for increasing PA levels in the school setting and introduces other untested interventions that could become the basis of future well-designed studies. Policies outlined in this review should be considered by a range of stakeholders and be carefully monitored and evaluated. These policies should include daily, quality, safe physical education and physical activity; extracurricular physical activity; training of physical activity leaders; active transportation to and from school; adequate facilities; and community outreach. Successful school initiatives and stakeholders should also be recognized formally for their contribution.

Key words: Policies; physical activity; school

Physical activity (PA) has been demonstrated to be an effective way to improve health and prevent the leading causes of death, disease and disability.¹ One of the reported determinants of childhood obesity and associated chronic diseases is a lack of adequate PA.

Indeed, over 50% of Canadian children are not active enough for optimal growth, and 90% do not achieve 90 minutes of moderate-to-vigorous PA per day.² The 2007-2009 Canadian Health Measures Survey demonstrates inadequate PA levels, revealing that youth have a greater mean body mass index, waist circumference and skinfold measurement as well as lower levels of fitness than they did in 1981.³ Many factors may underlie lower PA levels, including greater access to sedentary ways to enjoy leisure time (television, video games), lower rates of active transportation, which may be partially due to urban design, perceived unsafe environments for outdoor play and pressures on schools to place a greater emphasis on academic achievement at the expense of physical education. In 2000, a school health study looked at a nationally representative sample of private and public schools and found that only 8% of US elementary schools, 6.4% of middle schools and 5.8% of high schools with existing physical education (PE) requirements provided daily PE classes for all grades for the entire year.⁴ Internationally, physical education appears to have lost much ground over recent years. Quantified, this loss amounts to 15%-20% of weekly time allocation, resulting from cost reductions or space making for more academic or new school subjects.⁵ In many countries, there is a clear discrepancy between curricular demands and actual practice. Unsatisfactory infrastructure, lack of equipment, inadequate financial resources, poor attainment of the goals set, low qualification of teachers, over-sized classes and other problems exist.⁶

Some benefits of PA during childhood include weight reduction and improvements in lipid profiles, insulin sensitivity, self-esteem and self-concept.⁷ Several studies suggest that PA does not compromise academic performance and can, instead, have a positive impact on it and on cognitive functioning.⁸⁻¹³

Like other healthy behaviours, PA should be initiated during early childhood. This needs to be fostered by social and political policies.¹⁴ Schools are one of the most critical settings for promoting physical activity among children and youth, since schools reach a high proportion of the pediatric age group in both high- and low-income countries. However, appropriate policies are necessary to provide children and youth the necessary opportunities to adopt regular physical activity.¹

This article aims to guide policy-makers at the national and sub-national levels in the development and implementation of interventions that promote physical activity in the school setting. It includes studies published in a recent review of the appropriate literature up to 2005.¹⁵

For the purposes of this document, policy can be defined as a formal statement or procedure within institutions (notably government) that defines priorities and the parameters for action in response to health needs, available resources and other political pressures.¹⁶ Additionally, physical activity is defined as any bodily movement produced by skeletal muscles causing energy expenditure.¹⁷ At school, PA includes participating in physical education, recreation and dance programs, school athletics and active play during recess; walking or cycling to and from school; and extracurricular opportunities that offer physical activities during leisure time (e.g., intramurals, interschool sports, clubs).¹⁸ Physical educa-

Author Affiliations

1. Social Marketing Consultant and Adjunct Professor, Department of Health Administration, Faculty of Medicine, University of Montreal, Montreal, QC
2. Associate Professor, Department of Pediatrics, Faculty of Medicine, University of Alberta, Edmonton, AB

Correspondence and reprint requests: François Lagarde, 5 Oriole St., Kirkland, QC H9H 4S2, Tel.: 514-694-7129, E-mail: flagarde@videotron.ca

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Table 1. Effective and Promising Policies for Physical Activity in Schools

Policy Area	Policy Option	Evidence
Daily, quality, safe physical education	Raise the quantity of physical education in schools, aiming for daily physical education throughout the school year.	Effective ³⁰⁻³²
	Provide a variety and choice of physical activities that meet specific needs for all children and youth (recognizing age, development, disability and gender).	Effective ³²⁻³⁴ Promising ³⁵
	Ensure that students are physically active for a large percentage of physical education class time.	Effective ^{36,37}
	Determine the minimum level of qualifications that physical education teachers and physical activity leaders should have.	Effective ³⁸
Daily, quality, safe physical activity	Integrate physical activity into other curricula and provide appropriate training of educators, as well as support for implementation.	Effective ^{32,39-43} Promising ⁴⁴
	Integrate the physical, psychological and social health benefits of physical activity, as well as actual learning methods in various school curricula beyond the physical education class.	Effective ^{37,45-47} Promising ^{35,44,48}
Extracurricular physical activity	Provide a variety of physical activity opportunities, such as sports, non-competitive recreation, active recess (preferably outdoors) and active play through intramural and interscholastic activities that meet the needs, interests and abilities of all students and that do not substitute for physical education.	Effective ^{31,32,40,49-51} Promising ^{35,48}
Training	Provide physical education teachers and physical activity leaders, as well as all other teachers and school staff, with adequate, regular and appropriate training to establish quality and safe physical education and physical activity programs.	Effective ^{32,38}
Active transportation to and from school	Ensure that there is safe walking and cycling to school.	Promising ⁵²⁻⁵⁴
Facilities	Provide funding to ensure that adequate facilities and equipment are available for physical activity, including bike racks.	Effective ³² Promising ^{35,55-57}
Community outreach	Establish partnerships with municipalities and children/youth organizations to optimize use of school and community facilities such that community members access schools after hours and students have community-based physical activity opportunities (recreation centres, playgrounds and parks) during school hours.	Effective ³² Promising ^{48,67}

tion programs “offer the best opportunity to provide physical activity to all children and to teach them the skills and knowledge needed to establish and sustain an active lifestyle.”¹⁹ The school setting also provides the opportunity to introduce programs and an environment aimed at reducing sedentary behaviour.^{15,20}

METHODS

A recent review of the scientific literature to 2005 revealed a number of effective school-based interventions that improved student PA levels, fitness scores and obesity measures.¹⁵ Some of these interventions have already been used as a basis to improve school health policy. A subsequent standard review of the literature using data sources from MEDLINE, Pubmed, HealthSTAR, CINAHL, Eric, SCOPUS and PsychInfo was performed to identify additional school-based PA research, reviews, interventions, programs and policy recommendations published from 2005 to 2007. All articles with the following search terms were included: school, physical activity, policy, practice, obesity, fitness, school health, physical education, sport, gym. These two reviews formed the basis of the evidence for school-based policies in this paper. This information is captured in two tables based on effective or promising evidence or lack of evidence to support the proposed policy (see Results). Supplemental resources were the World Health Organization (WHO) Information Series on School Health,²¹ WHO Regional Office for Europe’s Health Evidence Network report on school health promotion,²² WHO guide for population-based approaches to increasing levels of physical activity,²³ *The Challenge of Obesity in the WHO European Region and the Strategies for Response*,²⁴ Healthy Child Manitoba,²⁵ Washington State Department of Health report on *Nutrition and Physical Activity: A Policy Resource Guide*,²⁶ the National Evaluation and Measurement Meeting on School Nutrition and Physical Activity Policies,²⁷ Action Schools! BC²⁸ and Annapolis Valley Health Promoting Schools.²⁹

RESULTS

Summary of literature search

Effective and Promising Policies

In order to capture the existing scientific basis for various school PA policies, a table of evidence has been created (Table 1). In this table, the policies listed are either *Effective*, whereby the interventions “were tested in one or more well-designed, controlled, prospective studies and found to affect physical activity behaviour” or *Promising*, whereby the rationale behind the policy was supported in one or more well-designed prospective or cross-sectional studies.²⁶

Untested Policies

Untested policies and their rationales are those that have not been rigorously tested in prospective or cross-sectional studies. Many of them come from various guides and incorporate ideas from stakeholders who have a good working knowledge of school infrastructure. These ideas often show great promise in a small-scale setting and could become the basis for future well-designed studies. Integrated in Table 2 are untested recommendations.²⁶

Knowledge gaps

Multifaceted school-based programs that focus on increasing PA are an integral part of the creation of healthy school communities. While the current literature identifies many school-based interventions that benefit children and youth, the WHO has identified other strategies requiring further study.⁶⁸ These include the development of methods to promote physical activity for children with disabilities in schools. More ethnic- and gender-specific tactics that adequately involve the adolescent population during and outside of school hours in rural and urban settings are needed. Given the rising rates of overweight in preschoolers worldwide, daycare and school-community PA programs addressing this age group should be developed. It is first essential to determine the recommended

Table 2. Untested Policy Options for Physical Activity in Schools

Policy Area	Untested Policy Option	Example
Curricular and extra-curricular activities	Make physical activity enjoyable, respectful of all children regardless of gender, race or disability. Ensure that the activity promotes fair play and maximum participation. Discourage the use or withholding of physical activity as punishment.	North Carolina ⁵⁸
Safety	Establish adequate safety precautions to prevent injuries and illness from physical activity. Collect medical information from students and parents to confirm safe participation in physical activity.	North Carolina ⁵⁸ School health report cards ⁵⁹
Family and community involvement	Ensure that family and community members can take part in planning and decision-making. Provide opportunities for family and community members to advocate for and participate in activities and services offered through schools.	UK National Healthy Schools Programme ⁶⁰ Saskatchewan in Motion ⁶¹ Healthy Schools in Motion ⁶² UK National Healthy Schools Programme ⁶⁰ Saskatchewan in Motion ⁶¹ Healthy Schools in Motion ⁶²
School staff	Seek support and resources from family, community members and organizations. Promote the health benefits of physical activity to school staff. Provide school staff with opportunities to be physically active with colleagues.	Saskatchewan in Motion ⁶¹ North Carolina ⁵⁸ School worksite health promotion ⁶³ UK National Healthy Schools Programme ⁶⁰ North Carolina ⁵⁸ School worksite health promotion ⁶³
Health care professionals	Make recommendations on physical activity for students with disorders or disabilities.	American Academy of Pediatrics ⁶⁴
Recognition	Recognize schools, administrators, teachers, parents and students who meet standards and make significant contributions to the advancement of physical activity and physical education in schools.	Physical and Health Education Canada ⁶⁵
Monitoring and evaluation	Monitor and assess implementation, as well as physical activity levels and fitness.	UK National Healthy Schools Programme ⁶⁰ Healthy Schools, Manitoba ⁶⁶

amount and type of PA for preschoolers, which will require further investigation. Another area requiring attention is the evaluation of workplace health and wellness programs for school staff. Additionally, more study is needed to identify effective means to engage family members in order to promote PA outside of school hours. Finally, there is a need to develop strategies to improve collaboration between health and education decision-makers.⁶⁸ This is a critical step to ensure that healthy lifestyle programming is instituted in a seamless fashion within the school fabric.

DISCUSSION

In general, the literature suggests that increasing PA in children and adolescents is best achieved with multifaceted programs targeting behavioural change through implementation in multiple settings. The inclusion of parents and families, and outreach to stakeholders in the community are additionally important. School health programs that combine PA with other healthy behaviours, such as healthy eating and tobacco control, offer ideal opportunities for the implementation of the proposed programs. Such integrated initiatives often stem from a broad societal commitment to addressing chronic diseases. However, a lack of scientific evidence on the efficacy of these integrated initiatives should not be used to postpone their adoption. The WHO recommends that member states should initially take advantage of existing opportunities to introduce these programs within their current context and levels of resources.⁶⁹

The successful adoption, implementation and monitoring of the interventions outlined in this article will require the involvement and cooperation of numerous stakeholders: governments, school personnel, students, parents, health professionals, non-governmental organizations, the planning community, private sector, media and

the academic community. Their respective and complementary responsibilities should cover the following roles: advocacy, inter-sectoral collaboration to build the capacity of health and education systems to work together, as well as program and policy development, implementation and evaluation.

The WHO encourages Member States to create policy that adequately addresses school health. This should include the promotion of PA before, after and during school hours for students, teachers and others working in this setting.⁶⁸ Jurisdictions engaged in the further development of policies supporting PA in schools are strongly encouraged to establish a monitoring and evaluation framework. As part of the Global Strategy on Diet, Physical Activity and Health, the WHO has developed such a framework.⁷⁰

CONCLUSION

The current chronic diseases associated with obesity present all nations with unprecedented public health challenges that have been underestimated and inadequately addressed by decision-makers worldwide. The rising rates of childhood obesity and associated co-morbidities will significantly accentuate this burden of ill health unless sufficient strategies are adopted in a timely manner.

An important strategy to reversing these trends is to return to a more physically active society. Environmental modifications encouraging PA should be implemented early in childhood to support positive lifelong habits. This article outlines a wide range of interventions incorporated into the school setting that are effective in increasing student physical activity levels, health and well-being. Broad-based, multifaceted programs are urgently needed to achieve such outcomes. An effective school PA framework will require an implementation plan early in the process with dedicated resources as well as a validated evaluation strategy. Given the

challenge, the input from an extensive range of stakeholders at the national and subnational levels will be essential to achieve these goals.

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Policy Options to Support Healthy Eating in Schools

Mary L. McKenna, PhD, RD

ABSTRACT

Objectives: School nutrition policies offer a promising avenue by which to promote healthy eating and reduce the risk of chronic disease. This article reviews policy components that could support healthy eating, examines their evidence base and suggests directions for future research.

Method: Information was drawn from research and other literature written in English between 1994 and 2008. Guided by recommendations from the World Health Organization, evidence pertaining to five potential components of policies was identified and reviewed: foods available, the food environment, health education, health services and counselling, and family and community outreach.

Results: A limited number of evaluations have examined the impact of school nutrition standards and have shown a positive impact on food availability and student nutrient intake. Results have shown that behaviourally focused nutrition education, especially when combined with food services and other initiatives, may affect students' eating habits positively but may not decrease obesity levels. Evidence pertaining to other potential policy subcomponents, such as limiting food marketing in schools, coordinating all food services and providing nutrition-related health services, is limited or lacking.

Conclusion: Conceptually, comprehensive school nutrition policies comprising all five policy components offer an integrated and holistic approach to school nutrition. They could provide an umbrella to guide all school actions pertaining to nutrition and serve as a framework for accountability. Does conceptualization match reality? Further research is needed to determine how policy components affect implementation and outcomes.

Key words: Public health; education; health promotion; nutrition; policy; schools

Comprehensive school health (CSH) is a term used in Canada that is synonymous with the terms "Health Promoting Schools" and "Coordinated School Health" used by other jurisdictions.^{1,2} School nutrition policy, as part of CSH, offers a promising strategy for reducing the risk of chronic disease, contributing to healthy weights and supporting student learning.³⁻⁵ School nutrition policies provide a framework by which schools can plan, implement and evaluate nutrition-related actions using a coordinated approach that reflects current dietary guidance.

To assist the many jurisdictions that are developing policies, this article summarizes evidence pertaining to potential components of comprehensive policies, organized as follows: food and beverages available, food environments, health education, health services and counselling, and family and community outreach. Potential subcomponents of policies, such as nutrition standards, food programs and food contracts, are also addressed, as are directions for future research.

METHOD

Because of the limited evidence base it is premature to conduct a rigorous, systematic review of school nutrition policies. Recommendations from the Health Promoting Schools (HPS) of the World Health Organization (WHO) and the Nutrition Friendly Schools Initiatives (NFSI) informed the selection of the five policy components reviewed in this article. In keeping with the WHO Global Strategy on Diet, Physical Activity and Health, only components that affect nutrition-related chronic diseases were included. Evidence pertaining to each component was drawn from a variety of sources: randomized controlled trials, epidemiologic observations,

practice-based evidence and informed opinion (e.g., the Institute of Medicine [IOM]) The literature was obtained from PubMed searches on school nutrition policies from 1994 to 2008 and other pertinent literature, such as governmental and non-governmental reports. Searches were conducted on school nutrition policy and each policy component and subcomponent. Documents in English were assessed for relevance, research design, conceptual robustness and contribution to the evidence base.

Summary of literature search

Food Available in Schools

Nutrition Standards

Nutrition standards, the standards that determine the types of food available in schools, are central to nutrition policies; some policies consist solely of nutrition standards. Many agencies, such as the WHO⁶ and the IOM,⁷ recommend the development of standards to encompass all foods available in school to help students optimize their nutrient intake. Internationally, existing standards vary in stringency (e.g., strict requirements for fat, salt or sugar versus more general requirements) and adherence criteria (e.g., required versus recommended implementation). In addition to food/nutrient standards, standards may specify portion size, energy content, availability (e.g., limitations on location and timing) and grade

Author Affiliation

Professor, Department of Kinesiology, University of New Brunswick, Fredericton, NB
Correspondence and reprint requests: Mary L. McKenna, PhD, Department of Kinesiology, University of New Brunswick, PO Box 4400, Fredericton, NB E3B 5A3, Tel: 506-451-6872, Fax: 506-453-3511, E-mail: mmckenna@unb.ca

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level (e.g., items permitted for secondary but not elementary students) (see IOM⁸ for an example).

The mandates pertaining to standards vary widely. They may reflect national legislation (e.g., Scotland) or subnational legislation (e.g., Ontario). They may address the nutritional quality of meal programs and/or all foods available in schools (e.g., the US has required standards for meal programs and voluntary standards for all other foods). While limited in number, evaluations of nutrition standards indicate a positive impact on food availability and student consumption.^{3,9,10} Additional research supports standards for food preparation and procurement.¹¹ Currently, too little research has occurred to arrive at a consensus on the most effective types of standards.

Food Programs

As described by HPS, food programs aim to increase food availability while promoting healthy eating.¹² Numerous countries (not Canada) operate national programs that range from the provision of a complete lunch or breakfast to single foods such as fruits, vegetables or milk.¹³ Evaluations of US meal programs show that they contribute to higher intakes of key nutrients.¹⁴ Fruit and vegetable programs also show a small but positive impact on consumption,^{15,16} as do milk programs.¹⁷ Research from Prince Edward Island indicates that student uptake of unsubsidized school meals may be quite limited,¹⁸ in contrast to the high participation rates in countries with universal meal programs funded by government.¹³ A report published in 2000¹⁹ concluded that most meal programs in Canada did not meet the criteria for sound social programs. Ten years later, it is timely to revisit the question and to examine the relation between school food programs and nutrition policies.

Contracts with Local Food Producers

Contracts with local food producers and with food companies can also follow nutrition standards. The WHO's Global Strategy on Diet, Physical Activity and Health encourages the procurement of food from local producers, an initiative also supported by HPS.¹² Story et al. support the increasing number of farm-to-school programs and school gardens as a strategy for obesity prevention.²⁰ Limited research indicates that local foods, such as fruits and vegetables, may contribute to healthier eating in schools, provide educational opportunities for students, assist with farmland preservation and support local economies.²¹ Further research on this topic, including the impact on the environment, is warranted.

Exclusive Contracts

Contracts that give soft drink companies the exclusive right to sell their product in schools have been criticized for promoting the consumption of full-calorie soft drinks. These drinks are associated with an increase in calories and body weight and a decrease in calcium intake.²² Limited evidence from the US indicates that the presence of soft drinks in schools influences student consumption levels.²³ In 2006, major soft drink companies agreed to adopt standards to phase out full-calorie carbonated soft drinks by 2009-2010 in all US schools.²⁴ While this agreement does not preclude the signing of exclusive contracts, by the 2007-2008 school year shipments of full-calorie soft drinks had decreased by 65% compared with 2004.²⁵ Refreshments Canada also agreed to remove all full-calorie soft drinks from Canadian schools by the 2009-2010 school year.²⁶ It

will be important to monitor the impact of this change and determine the extent to which full-calorie soft drinks are replaced with other beverages.

Food Environment

Food and Beverage Marketing

Examples of food and beverage marketing include logos and brand name signage (e.g., on vending machines), sponsored educational materials and free product samples.²⁷ A number of groups recommend the elimination of all food marketing in schools,²⁸ and others recommend that only healthy foods be marketed.²⁹ There is insufficient evidence to determine which approach might be most effective; however, US research indicates that schools can use the marketing strategy of price reductions to increase the purchase of healthier items.³⁰

Food Availability Near Schools

The HPS recommends that schools cooperate with nearby vendors so that their food items support health.¹² In the absence of policy, a higher concentration of fast food restaurants may cluster near schools, whereas a relatively low concentration of grocery stores sell fruits and vegetables.³¹ In the US, student participation in school meal programs was higher where policies prohibited students from leaving the school campus during the school day.³²

Other

Other aspects of the school food environment that policies may address include avoiding the use of food as a reward or punishment,^{27,33} providing guidance on foods and celebrations,²⁷ supporting non-food fundraising²⁷ and promoting a child-centred atmosphere for eating.³⁴ An additional subcomponent is to ensure that a senior staff person is responsible for coordinating these and all other aspects of school food, including cafeterias, vending machines and food outlets.³⁵ This person could help reduce the fragmentation among food services that often exists³⁶ while ensuring that students have sufficient but not excessive access to food. The impact of these policy subcomponents is not well studied.

Health Education

Nutrition Education

As part of health education, nutrition education may include food preparation and consumption, food skills, factors that influence food choices and requirements, emotional and socio-cultural aspects¹² and energy balance.⁷ No research was found that discussed teaching students about school nutrition policies. Both HPS and the IOM recommend that nutrition be taught in all grades throughout the school year using an evidence-based curriculum that focuses on behavioural skills.^{7,12} Standards-based nutrition education may be taught as part of health education and/or integrated into other subjects and can be extended into the school environment (e.g., nutrition information at food outlets). While nutrition may be a common curriculum topic, the number of hours it is actually taught may be low³⁷ and insufficient to affect behaviour.²⁰

Evaluations of nutrition education interventions indicate that they may promote the consumption of healthy foods, especially if they are part of a multi-component intervention and are behaviourally oriented.³⁸ They are less likely to result in physiological changes, such as decreased body mass index.^{7,39} While guidelines exist on how to

design effective nutrition interventions for young people, research is needed to assess the extent to which they are followed.⁴⁰

Staff Qualifications

The success of implementing a comprehensive school nutrition policy requires involvement of school staff such as teachers, food service staff and the administration. Ongoing teacher training that includes behaviour change methods is an important consideration.^{7,12} A Canadian study found that prospective teachers were ill prepared to address nutrition in schools and recommended compulsory nutrition education in teacher education programs.⁴¹ In the US, specialized training is generally limited.³⁷ When it occurs,⁴² however, it aids with curriculum implementation and program sustainability.⁴³ Other staff members with nutrition-related responsibilities, such as health services staff, should have appropriate qualifications and receive opportunities for professional development.⁴⁴ It is important to ascertain the extent to which school staff members are prepared to adopt a comprehensive approach to school nutrition and to fill gaps where needed.

Health Services and Counselling

Health services can support healthy eating by providing information on access to food, dietary guidelines and food programs, and by assisting with the detection of nutrition problems, referrals and follow-up.^{12,45} For example, health service providers may assist with screening and surveillance to identify problems related to nutritional status. In the US, school-based body mass index screening has been used to increase parental awareness of their child's weight status,⁴⁶ but there is inconclusive evidence on the effectiveness of such programs to prevent obesity; more research is needed to assess the impact of screening and the potential harm that may occur.⁴⁷ School-based obesity treatment programs may be effective, but population-based programs might be the most appropriate to avoid vulnerability to teasing and embarrassment.⁴⁸ NFSI recommends that health services provide on-site services or have a referral system for students' psychosocial health.⁴⁹ Services can provide leadership by supporting affirmative action against bullying, stigmatization and discrimination due to body size or shape and food choices. It is unclear the extent to which schools provide health services to support healthy eating.

Community and Family Involvement and Outreach

Parental involvement is frequently a component of school-based health interventions.³⁸ HPS, NFSI and WHO recommend involvement of community and family groups in the development and implementation of school nutrition policies. A multi-partnered school health team that includes parents and community members can provide input, including advocacy, throughout the policy process.¹² In a review of the literature there were limited examples of parental and community involvement in school nutrition policies.^{3,48} More research is needed to clarify the role of community and parental involvement in advancing school nutrition policy and the role of schools in contributing to health promotion in the larger community.

Knowledge gaps and discussion

Jurisdictions with school nutrition policies face the challenge of deciding how to apply existing, limited research to develop policies that contribute effectively to student health and learning objec-

tives. Simultaneously, they have a role in advancing the evidence base to identify critical policy components and the relative roles of each, and to ensure that policies do no harm to students.

Although the evidence base is limited, comprehensive policies that address all five components discussed in this article are consistent with the multicomponent, coordinated and integrated approaches currently recommended to improve the health of young people.^{4-7,39,49} Comprehensive policies can provide students with a consistent health-reinforcing message from multiple sources (e.g., food services, classrooms, health services) by example and through education. They can link school nutrition with families and communities and serve as a framework for accountability.

The varied policy landscape among Canada's provinces and territories presents an opportunity to help address the current evidence gap. A summary of current provincial policies indicates that while all of them include nutrition standards, only a few address additional policy components and none address all five.⁵⁰ Moreover, the policies vary in stringency and mandate.⁵⁰ This situation provides an opportunity for jurisdictions to assess the differential impact of policy components, stringency and mandate on implementation and outcomes. Related questions include the following: What is the relation between the type of policy and the resources allocated to implement and evaluate it, if any? How does the type of nutrition policy affect students' perceptions of food, nutrition, eating and health? What are the unintended consequences of policies, if any? Given that no Canadian policies are fully comprehensive at this time, two questions remain: What factors influence the development of comprehensive policies, and What is their impact on implementation and outcomes?

CONCLUSION

Concerns about rising rates of obesity and chronic disease risk have focused attention on school nutrition. School nutrition policy is part of a broader CSH approach that is consistent with international recommendations. Comprehensive policies can address all aspects of school food, including the foods available, the food environment, health education, health services and counselling, and family and community outreach. Provincial/territorial policies in Canada vary widely, providing an opportunity to assess the effects of policy components on the implementation and impact of policies. Further research in this area would make a valuable contribution to the field.

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Facilitating Health and Education Sector Collaboration in Support of Comprehensive School Health

Pan Canadian Joint Consortium for School Health

ABSTRACT

Comprehensive school health (CSH) is embraced internationally as the most effective way of promoting the health of students and the school community. It is a framework for supporting improvements in students' educational outcomes while addressing their well-being in a planned, holistic way. While many successful CSH initiatives are brought about by passionate individuals at the grassroots level, these initiatives benefit greatly from effective cross-sector collaborations within and among governments to coordinate policy and funding from the health and education sectors.

Governments represent just one group of professionals within the myriad of players involved in implementing CSH in Canada. To be effective contributors to the model, all levels of government need to work together to reduce duplication while at the same time minimizing gaps in the policies and practices that support school health promotion. Collaboration between the health and education sectors within and across governmental boundaries is proving to be an effective mechanism for achieving this. In its first five-year mandate, the Pan Canadian Joint Consortium for School Health has broken new ground in horizontal integration and, as a result, has identified a set of key factors necessary for successful cross-sector collaboration.

Key words: Cross-sector; collaboration; comprehensive school health

Schools play an important role in shaping the physical, emotional, social and intellectual development of children and youth. Schools have the potential to act as healthy settings for the promotion of physical activity and healthy eating among students because they reach the majority of this target age group in urban, rural and northern settings. Schools also provide an ideal opportunity to monitor changes in student knowledge, attitudes and behaviour on an ongoing basis.

Schools have a long history as settings for health promotion. Most early interventions were aimed at changing health risk behaviours among students but tended to target only one type of behaviour, often with a single message and on a "one-time" basis from a curricular perspective (e.g., sexual health education).¹ Evaluations of this approach cast strong doubt on its effectiveness, and during the 1980s and 1990s proponents of school health developed approaches that were more congruent with the multifaceted and interconnected nature of the health challenges faced by children and youth by proposing broader curriculum design and teaching strategies.² In fact, Canada was at the forefront of these developments as early as 1986, with the crafting and subsequent worldwide endorsement of the World Health Organization's Ottawa Charter on Health Promotion.³ The Charter contributed to laying the groundwork for a shift in focus in health promotion from the behaviour of individuals to the development of "healthy settings". The World Health Organization adopted many of the terms and concepts articulated in the Charter and through it evolved the notion of comprehensive school health (CSH), which has since emerged as the "gold standard" for the design of school health promotion worldwide.⁴

Comprehensive school health in Canada

CSH initiatives benefit from effectively coordinated policy and funding from health and education sectors at both the national and the provincial/territorial levels. In Canada this poses a unique

challenge, given that responsibility for primary and secondary education is entirely under provincial/territorial jurisdiction. Therefore, to implement CSH as effectively as possible in Canada, there is a need to coordinate the efforts of the health sector, a shared federal and provincial/territorial responsibility, and the education sector, which operates autonomously within each of Canada's provinces and territories.

It was the recognition of this need by ministers of education and ministers of health that brought about the creation of the Pan-Canadian Joint Consortium for School Health (JCSH) in 2005 as a mechanism through which horizontal, cross-sector collaboration between the two sectors and across provincial, territorial and federal jurisdictions could be facilitated.

Horizontal collaboration

Horizontal collaboration is broadly defined as an initiative involving a number of organizations, departments or governments that must address issues requiring the crossing of jurisdictional boundaries to arrive at solutions.

Managing a horizontal initiative involves entering into an arrangement with partners that has the following features:

- shared authority and responsibility among partners
- joint investment of resources (e.g., time, funding, expertise)
- shared risks among partners
- mutual benefits and common results⁵

While horizontal initiatives are not "magic bullets" for implementing successful cross-jurisdictional collaboration among

Correspondence and reprint requests: Cindy Bachop, BComm, British Columbia Ministry of Education, PO Box 9158 Station Provincial Government, Victoria, BC V8W 9H1, Tel: 250-356-9380, Fax: 250-356-6033, E-mail: Cindy.Bachop@gov.bc.ca

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autonomous organizations, they can be viewed as an emerging alternative form of partnership that, by virtue of its structure, necessitates the development and maintenance of complex relationships over a long period of time.

One of the important benefits of horizontal initiatives is that they bring together unique combinations of key individuals who normally would not have natural opportunities to work together. This, in turn, breaks down silos and makes it possible for partners to align their respective intersectoral and/or interdepartmental efforts in a more concerted fashion than would otherwise be possible.

There can be significant organizational and transitional costs associated with the introduction and maintenance of horizontal approaches and structures, but, once in place, they can help realize synergies and maximize the effectiveness of policy and/or service delivery. Often there are resulting economies of scale achieved through the sharing of resources such as data and information, information technology and property.

Key success factors in horizontal governance

Following its inception, the JCSH undertook an internal review of better practices in horizontal initiatives in Canada.⁶ Building on these findings the JCSH went on to break new ground in horizontal integration and, as a result, is evolving as an effective model of collaboration across the health and education sectors as well as across jurisdictional boundaries. What has emerged from this experience is the following set of key factors recommended for successful public sector horizontal collaborations.

1. **Political support.** Political will and political leadership are critical. Ministers, ministerial committees or senior management champions can ensure that timely agreements as well as accountability are in place and can convey the status and importance of any cross-sector collaboration.
2. **Common vision.** A common vision and terminology that is shared by all partners is essential.
3. **Realistic goals.** Goals must be realistic in relation to the capacity of the initiative.
4. **Client focused.** Although policy-driven, cross-sector collaboration must also be client focused. This includes clarity and agreement as to who the client is.
5. **Clear accountability.** A clear accountability framework is essential, beginning with terms of reference for the collaborating team and all subcommittees and working groups. Individual accountability is an essential aspect of the framework. The broad objectives of the collaboration must be interpreted and translated into operational activities by all personnel (such as managers and others) who are charged with the responsibility of supporting and/or implementing it.
6. **Planning.** Early stage planning and relationship building is essential to developing clear expectations, agreements and parameters that will guide the work of the initiative.
7. **Appropriate funding.** Funding must be commensurate with the initiative's needs, as warranted by its goals, and provided over a sufficient period of time (e.g., a multi-year funding commitment or a commitment to renew funding).
8. **Strong working relationships.** There must be sufficient time and opportunity for partners to develop relationships with one another. Ongoing and open communication is essential.

9. **Transparency.** The initiative must benefit all the partners involved; hence, transparency among partners, especially as it concerns their interests and needs, is essential.
10. **Information management tools.** Cross-sector collaborations benefit from effective information management tools, the most commonly used being a website providing "one-stop shopping". Over and above this, large-scale initiatives especially benefit from clear performance measurement systems whose development and maintenance may require sophisticated information technology tools.

CONCLUSION

Given the complexity of health issues for children and youth, CSH offers a promising approach by positioning schools as effective settings for health promotion for this target population. Governments represent just one group of professionals within the myriad of players involved in implementing CSH in Canada. To be effective contributors to the model, all levels of government need to work together to reduce duplication while at the same time minimizing gaps in the policies and practices that support school health promotion. Collaboration between the health and education sectors within and across governmental boundaries is proving to be an effective mechanism for achieving this.

Genuine collaboration requires a culture of trust and open communication as well as a commitment from politicians and senior management to build and sustain infrastructure that supports and models collaborative behaviour as the expected way of conducting government business. It is important to recognize that these elements do not automatically fall into place when the founding agreement for a partnership is signed. Sufficient time to build effective structures and working relationships is critical to address the challenges and complexities that inevitably arise when working across sectors as well as across jurisdictional boundaries. In its first five-year mandate the JCSH has broken new ground in horizontal integration and, as a result, has identified a set of key factors necessary for successful cross-sector collaboration.

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Stakeholder Engagement for Improved School Policy: Development and Implementation

Pan Canadian Joint Consortium for School Health

ABSTRACT

The health and education departments of government share a responsibility for promoting the health of children through policies in the school setting. These policies can be enhanced through the involvement of such stakeholders as school personnel, students, parents or caregivers, health professionals, the non-profit sector and industry. Although there is little evidence-based literature on the roles of stakeholders in school policy development and implementation, stakeholder involvement appears to be critical throughout the policy process. This article discusses stakeholder involvement in the development and implementation of school policies that promote and support healthy eating and physical activity. Canadian examples illustrate stakeholder engagement in this context.

Key words: Stakeholders; school health policy; nutrition; healthy eating; physical activity; active living

Promoting the health of children and youth through policies in the school setting is a responsibility often shared by the health and education sectors. In fact, it has been said that achieving widespread adoption of approaches such as comprehensive school health (CSH) hinges on continued commitment from, and strong links between, both sectors.^{1,2} Collaboration may be made easier if both sectors perceive benefits to their involvement, consider the implementation strategies feasible and share similar monitoring and evaluation methods.³ Furthermore, research in Europe indicates that when the educational element of the approach is emphasized, there is a greater chance of enhancing students' health and securing staff commitment to the program.² Nevertheless, the efforts of health and education departments in support of school health promotion can be enhanced through stakeholder involvement. Stakeholder involvement appears to be critical throughout the policy process, from the identification of the need for a policy, to analyzing options and developing the policy, through to policy adoption, implementation, evaluation and sustainment. Coordination among stakeholders at all levels is required if a national or subnational policy is to be adopted, implemented and evaluated at the school level.

As a complement to a companion article on facilitating health and education sector collaboration (pages S18-S19), this article will discuss the role of stakeholder involvement in the development and implementation of school policies that promote and support a CSH approach to healthy eating and physical activity. It summarizes the findings of two background papers used in the development of the school policy framework of the WHO Global Strategy on Diet, Physical Activity, and Health.^{4,5} Canadian examples will illustrate successful stakeholder engagement in this context.

METHODS

The literature search focused on retrieving documents published between 1994 and 2009 that described stakeholders' roles in school health policy development and implementation. A search was conducted using MEDLINE/PubMed and the following key words: stakeholders, school health policy, nutrition, healthy eating, physical activity and active living. A Web-based search engine was used to locate relevant grey literature, using the same key words. Reference lists and related articles identified within MEDLINE/PubMed were also reviewed to retrieve additional publications. Canadian examples illustrating successful stakeholder engagement within the school setting were identified through a solicitation from members of the Joint Consortium for School Health. From this input, the examples profiled reflected the breadth and diversity of initiatives across the country.

Overview of stakeholder involvement

Stakeholders – whether they represent school personnel, students or parents, health professionals, academia, non-governmental organizations, the private sector, industry, media or marketing interests – may have important information about an issue, be affected by a policy decision or be in a position to affect a policy

Correspondence and reprint requests: Claire Avison, Executive Director, Cross-Sector Strategic Initiatives, Ministry of Education, 620 Superior St. 2nd Floor, Victoria, BC V8W 9H3, Tel: 250-356-6760, Fax: 250-356-6057, E-mail: claire.avison@gov.bc.ca

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Figure 1. Engaging school personnel in the pursuit of healthy schools

- As a response to the issues of child obesity and inactivity, **Active Schools Programs** were piloted in a few schools in two districts in Newfoundland and Labrador. In addition to adding 80 to 100 minutes of physical activity per cycle for students in grades Kindergarten to 6, the idea was to promote physical activity opportunities to students on days when they did not receive physical education. To this end, classroom teachers received in-service training, and participating classes were provided with a “treasure box” of activity ideas and equipment. Students, staff, parents and the community at large were involved in the planning and implementation process and quickly linked with community partners to access funding, resources and substantial support at the community/municipal, district, provincial and federal levels.
- The Dr. Swift Middle School in Alberta has created a **Healthy Choices Board** to identify health issues in the school, develop an understanding of these issues and initiate changes in the school to address them. Its first task was to develop a menu for school-based food services and follow up with school-wide health initiatives such as yoga during lunch, an after-school exercise club, diabetes awareness week activities, assertiveness training and the promotion of health through drama. Composed of nine students (three from each grade), school counselors, a school administrator and a parent, the Board is making connections with outside agencies such as the Native Friendship Centre, a women’s shelter and others that can support the initiative.

decision.⁶ The types of stakeholder to engage in any policy process will vary according to the issue, the extent to which it crosses domains, the existing stakeholder landscape, as well as the intended level of policy implementation, monitoring and evaluation. For instance, if implementation strategies are developed at the district or school level, local stakeholder groups may be more inclined to become involved than if implementation is intended at the school-district or provincial level.

There are few published texts on how to engage stakeholders effectively in the development, implementation or evaluation of health-promoting policies in the school setting. Experience and research have identified a number of challenges that may arise, including low priority, limited resources, concerns about the policy’s impact and resistance to policy change perceived to be imposed from “the top”.⁷ Government departments are encouraged to establish mechanisms that promote participation of stakeholders at all levels and aim to strengthen intersectoral cooperation.⁸ Potential roles for key stakeholders are described below, and perspectives are provided on facilitators or barriers to the effective involvement of these stakeholders in policy development and implementation.

School Personnel

School personnel, such as school administrators, teachers, coordinators and food service staff, have unique roles in the context of school-based health promotion initiatives. (Figure 1) Senior management and school principals, for instance, have been identified as influential in the promotion and maintenance of school health promotion programs⁹⁻¹¹ by providing adequate resources, delegating responsibilities among staff and liaising with external groups. Teachers, a key source of information on school practices, are typically responsible for delivering the curriculum component of health promotion programs as well as extramural activities.¹² The onus is on food service staff to implement nutrition standards when ordering, preparing and displaying the foods and beverages provided and sold to students. A school health coordinator can also be a valuable resource as she or he can assume responsibilities that teachers might otherwise have to take on in addition to their classroom responsibilities. In fact, the existence of project coordinators, teams or champions (e.g., a principal or other administrator) has

Figure 2. Student and parent involvement for sustainable change that meets local needs

- At a government-led conference for local youth, students at Campobello Island School in New Brunswick challenged data indicating that they were not progressing in the area of mental **resilience**. They felt that a school and community environment of aggression and bullying was an obstacle to their progress and requested an anti-bullying program. Collaboration among provincial and local authorities led to funding from a Suicide Prevention Committee, speakers on topics identified by students and fun-based community development. Students are now doing regular anti-harassment activities, and more are participating in wellness data collection and community needs assessment, as well as volunteering at a local senior centre.
- A District Food and Nutrition Policy in Kamloops, BC, required schools to develop and implement local policies governing the sale and distribution of food and beverages. The Parent Advisory Council at one elementary school came up with a fun way for students and parents to take part in a food selection process for the school’s Snack Shack and Hot Meal selections. Three students from each grade and parents tasted a variety of food products and provided feedback on the options. Collection of the preference and cost data ensured that healthy nutritional choices would remain viable fundraisers. As a result of the district-wide activity, a full-time school health coordinator was hired to assist schools with the implementation of school food guidelines and the coordination of healthy school activities.

been identified as a positive element for staff motivation, knowledge sharing and sustainable implementation of interventions.^{2,12,13} As views and perceptions of the health-related policy may differ, communication with and among school personnel and other stakeholders is a facilitating factor in stakeholder engagement and policy implementation. Other facilitating factors include involving school personnel in the development of the policy or program, providing teachers with easy-to-use program materials that are aligned with academic mandates and appeal to students, and supporting staff through training and the provision of resources such as time and funding.^{8,12,14} Health officials must recognize that while they may regard student health as a key priority, school personnel juggle many demands, the most important of which is academic achievement.

Students and Their Families

Involving students in the policy decision-making process is logical, given that they are the ultimate beneficiaries of increased school-based physical activity and greater access to healthy food choices.

There is little published research on the impact of student involvement in the school policy process. However, the inclusion of students during the planning and design of any school-based program will likely influence its feasibility and acceptability;¹² it may also help foster a sense of ownership and reinforce the concept of collective action.¹¹ Students can help define needs, identify gaps and suggest activities or mechanisms to incorporate their feedback in health promotion initiatives. Yet, few systematic opportunities for students to voice their opinions and concerns currently exist or have been described in the literature.

The involvement of parents, caregivers, and families is important by virtue of their capacity to promote and model healthy eating and active living for their children.^{15,16} (Figure 2) Parent and caregiver involvement in the development stage can help ensure that the barriers to their support of health promotion initiatives are identified and potential solutions developed. For example, a decision to drive children to and from school will affect alternative programs, such as “walking school buses”, that promote greater physical activity for school children.¹⁷ Parents can play a number of additional roles, from receiving information, being involved in

Figure 3. The power of community partnerships

- Among actions taken to implement **school food guidelines**, a new parent-provided hot lunch program is available to all students at a Central Coast BC school with funding from Aboriginal education funds and the support of the Nuxalk Nation. A local co-op also supports the implementation of the guidelines by allowing schools to purchase healthier items at reduced costs. Two local airlines transport food supplies to remote schools at no cost.
- Toronto Public Health partnered with FoodShare, a non-profit agency working to improve access to affordable and healthy food from field to table, and three school boards to support the development of 10 new **school food gardens** in the city. With the financial assistance of the Toronto Heart Health Partnership, teachers, school staff, parents, volunteers and public health nurses were trained to start a school food garden, and garden tool kits were acquired.
- As part of a chronic disease prevention initiative, about 20 people from various associations in and around Minnedosa, Manitoba, assessed the need for and created a **healthy canteen**, with labour and space provided by the school division and a start-up grant from the regional health authority. The self-sustaining canteen sells reasonably priced food made from “scratch” with healthy ingredients. Profits pay the coordinator’s salary and supplies. A nutrition education component rounds out the canteen program.

homework assignments or program elements, fundraising, participating in extracurricular activities and committees at the school or school-district level, or lobbying decision-makers to support health promotion in the school setting.

Health Professionals

Public health practitioners are among the health professionals with a role to play in the context of physical activity and healthy eating promotion in schools. Beyond delivering health services, they may be involved in research, monitoring and evaluation; education; facilitation; and advocacy.¹⁸ Public health dietitians or nutritionists can use their skills and knowledge to assist in the development and implementation of policies and programs to meet specific food and nutrition objectives.^{19,20} The barriers to involving school nurses are similar to those identified for school personnel. They include lack of training and preparation, dearth of evidence and evaluation of health programs, lack of support from managers and lack of recognition from other health professionals.²¹ According to US sources, physicians may also be involved in school-based health promotion, for example, in sports-related activities, education, health promotion and workplace health, special education services, primary care services, staff in-service and board/committee membership. Their involvement may be limited because of lack of time, lack of training, liability concerns and inadequate financial compensation.^{22,23}

Private Sector

The private sector’s role as a future employer likely motivates its interest in supporting a healthy future workforce and, thus, supporting health promotion projects that target youth. Given the implications of school nutrition policies on school food procurement and availability in the school setting in general, the food industry will likely have a strong interest in being involved in the policy development process. Potential roles for the food and beverage industry include product development and reformulation; product packaging; responsible advertising; public-private partnerships; public relations; and corporate social responsibility, including advocating for policy changes to improve diets.²⁴

In the area of physical activity, many private sector stakeholders may be supportive of school-based policies or programs. Sporting goods manufacturers and recreation businesses are key suppliers of equipment and recreation opportunities for children

and youth; team sponsors and promoters of ticket discounts and sports camps can also help make physical activity more accessible.

However, the focus on profits and the targeted interests of some private sector organizations may come into conflict with action to promote and support healthy eating and to offer a wide palette of activity opportunities. For example, “pouring rights”, whereby soft drink companies pay for the right to have their vending machines in schools, can undermine efforts to promote healthy beverage choices. In addition, some governments, school boards or individual schools may have policies limiting or prohibiting sponsorships from the private sector or specific purveyors of products or services that do not meet policy criteria. In the case of “pouring rights”, limiting the soft drink company to offer only choices that comply with healthy eating policies, such as water or juice, could mitigate the negative effects of the arrangement. This illustrates the importance of coordinating policy development to ensure that messages are coherent and consistent.

The media, of which many outlets are in the private sector, serve as a vehicle to cover and discuss policy issues and can be engaged to market food products more responsibly and communicate healthy living messages directly to children and youth.

With the growing availability of cable channels, print and online sources, media outlets of particular relevance to a school-aged audience may be potential partners in innovative projects to communicate healthy living messages directly. However, given the enormity and complexity of partnering with traditional media at the national or even regional level, opportunities for schools and school districts to engage local media in healthy schools projects are likely more realistic.

Internet-based social media may be particularly suited to engaging youth as agents of positive health behaviour within their networks.

Non-governmental Organizations

Non-governmental organizations (NGOs), including community, health and social organizations, may be engaged in service provision, educational or support activities, research or advocacy. Successful strategies for partnerships with this sector include agreeing on a compelling and unique mission that will best be achieved through collaborative action versus individuals’ efforts; securing strong and consistent leadership that includes stable resources; drawing membership from existing successful alliances; and agreeing to and respecting a code of operations while retaining organizational flexibility.²⁵ (Figure 3)

The particular role of NGOs in supporting school intramural physical activity and sport through the establishment of sporting rules and guidelines for coaches is worthy of mention. Sporting associations at the regional, national and international levels indirectly interact with school sports and sporting activity in the community. However, non-competitive forms of physical activity may receive less support from sporting associations, which focus on competitive sports and, as a result, have less connection with the school community. This may undermine the range of physical activity options for children unless NGOs promoting improved physical health among children are enlisted to promote the notion of non-competitive physical activity, based on inclusiveness and accessibility.

CONCLUSION

There is a dearth of evidence on the roles of stakeholders in the development and implementation of school health policies. As well, little has been published on which engagement strategies work best with different stakeholder groups. The need for improved evidence demonstrating the impact of intersectoral action on health and health promotion interventions was recently acknowledged in a paper prepared for the Health Systems Knowledge Network of the WHO's Commission on the Social Determinants of Health¹⁸ and emphasized by others.²⁶

Existing research and experience suggest that the following factors may help address policy challenges and facilitate acceptance, adoption and implementation of policies as well as reinforcement of health messages:

- Coordination and communication among stakeholders at all levels
- Consideration of stakeholder views, concerns, priorities and decision-making processes
- Recognition of potential outcomes benefiting different sectors
- Training for all those who have a role in developing, implementing and evaluating policy
- Resources adequate to implement and evaluate policy components
- Support to maintain the policy as a priority in the face of competing agendas.

While governments have an important stewardship role to play in the development and implementation of policies, including the provision of resources, funding and evaluation, the successful adoption, implementation and monitoring of policy requires the involvement and cooperation of numerous stakeholders at all levels.

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Monitoring and Evaluating School Nutrition and Physical Activity Policies

Jennifer P. Taylor, PhD, RD,¹ Mary L. McKenna, PhD, RD,² Gregory P. Butler, MSc³

ABSTRACT

Given the increase in the number of Canadian jurisdictions with school nutrition and/or physical activity policies, there is a need to assess the effectiveness of such policies. The objectives of this paper are to 1) provide an overview of key issues in monitoring and evaluating school nutrition and physical activity policies in Canada and 2) identify areas for further research needed to strengthen the evidence base and inform the development of effective approaches to monitoring and evaluation. Evaluation indicators, data sources and existing tools for evaluating nutrition and physical activity are reviewed. This paper has underscored the importance of identifying common indicators and approaches, using a comprehensive approach based on the WHO framework and ensuring that research capacity and funding is in place to facilitate high-quality evaluation efforts in the future.

Key words: Nutrition policy; physical activity policy; evaluation; school health

Consensus is emerging within the research and stakeholder communities that action at the school/district level, including nutrition and physical activity policies, must be a high priority to create supportive environments that will enable children to be active and make healthy food choices and, ultimately, that will reduce the future morbidity and mortality associated with the worrisome increase in childhood overweight and obesity.¹⁻³ In response, some provinces and territories in Canada have adopted such policies in recent years,⁴ and others are encouraging their schools/districts to do so, thereby creating a need to assess the effectiveness of such policies.⁵ Evaluating nutrition and physical activity policies is critical to helping improve policy content, enhance policy support and implementation, and ensure that policies are meeting their objectives and responding to the changing needs of governments and schools.^{6,7} Further, evaluation can help assess resource utilization during the policy process, the level of stakeholder involvement, the extent of policy implementation, and intended and unintended consequences. Finally, evaluation also provides much needed accountability to stakeholders and funders, strengthens the evidence base for future decisions and informs the development of innovative approaches to evaluation.¹

The 2006 World Health Organization (WHO) document “Global Strategy on Diet, Physical Activity and Health: A Framework to Monitor and Evaluate Implementation”⁶ provides a framework for and identifies key issues concerning the monitoring and evaluation of nutrition and physical activity policies. The WHO defines monitoring and evaluation as “systematic processes to assess the progress of ongoing activities as planned and identify the constraints for early corrective action, and to measure effectiveness and efficiency of the desired outcome of the programme”.⁶

WHO evaluation framework

The WHO Global Strategy on Diet, Physical Activity and Health (DPAS) framework to monitor and evaluate implementation states

that “adequate monitoring and evaluation indicators can be integrated in the process of behaviour change”.⁶ Five steps for monitoring and evaluation activities are recommended in this framework: 1) ensuring that a framework for monitoring and evaluation is included in strategy development; 2) identifying existing monitoring and evaluation activities; 3) selecting appropriate indicators to monitor progress; 4) evaluating in a consistent and ongoing manner; and 5) repeating evaluations.⁶ Ideally, a framework for evaluation should be developed in tandem with policy development. Guiding questions in designing evaluations include the following: What data will provide the best information to improve implementation that helps achieve policy goals? What validated indicators already exist to assist with evaluation? Are there existing sources of data that can inform the evaluation? Can evaluation measures be standardized to improve comparability among jurisdictions? and What are the needs of different stakeholders? The WHO document has provided a useful framework for identifying key issues pertaining to the evaluation of nutrition and physical activity policies. This paper will build on the document by identifying issues pertinent to the Canadian context. The specific aims of this paper are to 1) provide an overview of key issues in the monitoring and evaluation of school nutrition and physical activity policies in Canada, and 2) identify areas for further research needed to strengthen the evidence base and inform the development of effective approaches to monitoring and evaluation.

Author Affiliations

1. Associate Professor, Department of Family and Nutritional Sciences, University of Prince Edward Island, Charlottetown, PEI
2. Professor, Department of Kinesiology, University of New Brunswick, Fredericton, NB
3. Research Analyst, Healthy Living Unit, Centre for Health Promotion, Public Health Agency of Canada, Ottawa, ON

Correspondence and reprint requests: Jennifer Taylor, PhD, Department of Family and Nutritional Sciences, University of Prince Edward Island, 550 University Ave., Charlottetown, PE C1A 4P3, Tel: 902-566-0475, Fax: 902-628-4367, E-mail: jtaylor@upei.ca

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METHODS

All primary data-based papers and review papers published between January 1992 and January 2009 inclusive that focused on school nutrition policy evaluation were included. Databases searched were MEDLINE, Highwire Press, CINAHL, SCOPUS and Google Scholar; key terms included school nutrition policy, school physical activity policy, nutrition policy evaluation, school food policy.

RESULTS

Key issues in evaluation of nutrition and physical activity policies

Evaluation Indicators

The WHO DPAS report⁶ identifies potential process, output and outcome indicators for nutrition policy evaluation. Process indicators measure progress and how something has been done. Output indicators measure the products resulting from the process, whereas outcome indicators measure the ultimate outcomes of action, such as changes in knowledge, behaviour or health outcomes. The document identifies process and output indicators for the policy process (e.g., number and type of stakeholders involved in the policy process and nature of their involvement); foods available in schools (e.g., percentage of schools restricting the availability of high fat, sugar and salt products in all venues identified through self-report or independent school food service audits); healthy school environment (e.g., percentage of school staff that offer non-food rewards to students to recognize achievement or good behaviour); school health education (percentage of schools that teach school nutrition policy as part of their education curricula); school health services, counseling and social support (e.g., percentage of schools that offer social support services for nutrition); and community and family involvement and outreach (e.g., percentage of schools with a policy to involve families and communities in promoting and advocating healthy eating). Short-term outcome indicators are also identified, such as the percentage of students with intakes of school foods that meet dietary guidelines, and the percentage of school students within a healthy weight range.

The process, output and outcome indicators for physical activity have a similar form to those for nutrition.⁶ Examples of process and output indicators include “percentage of schools providing daily physical education using minimum time set in (sub) national policies” and “percentage of schools with an active transportation policy and program”.⁸ Examples of outcome indicators are “percentage of students reaching moderate to vigorous physical activity levels in physical education class” and “percentage of students surveyed satisfied with available physical activity opportunities”.⁸ It is important to note that, although countries or schools are identified as the target for evaluation, many of the data and indicators should be collected at all relevant levels (e.g., school, school district, province or state, and/or country).

Data Sources

Data sources for evaluating and monitoring include surveillance and health data, information from prior evaluations, interviews, administrative data and survey data. Specific to nutrition evaluation and monitoring are school-based observations of foods and beverages available in schools, documentation of food marketing,

observed or self-reported intake of foods and beverages and eating habits, and direct measures of weight, height and other health indicators. For monitoring and evaluation of physical activity, direct measurements, such as pedometers and accelerometers, can be used, as well as the monitoring of programs and policies related to physical education classes, between and after class physical activity and sport, policies concerning active modes of travel to school, and direct measures of weight, height and other health indicators. It is important that policy objectives be matched with appropriate evaluation indicators. For example, it would be inappropriate to base the success of a free fruit and vegetable policy or an active transportation plan for students solely on the impact of these interventions on students' body mass index. Such an outcome is unrealistic and would ignore other potential nutrition or physical activity benefits.

Existing Tools (Nutrition)

A number of tools exist to evaluate school nutrition policies for their comprehensiveness and rigour,⁹⁻¹² allowing for the collection of information on school policies and practices, the availability of competitive foods and the content of school meals, where applicable. The US School Health Policies and Programs study collects detailed answers to questions on food and nutrition policies at the state, district and school level every six years.¹³ Although the Institute of Medicine⁷ suggests using the Centers for Disease Control and Prevention's Youth Risk Behavior Survey to assess progress in implementing school nutrition standards, this information will not identify specific changes made by students in response to school-level policies. No comparable national data are collected in Canada. Rather, provinces and some school districts have designed their own surveys of foods sold and served at school, the nature of information and the level of detail collected varying from province to province.¹⁴⁻¹⁶ In Canada, the web-based Healthy School Planner (HSP) was developed by the Joint Consortium for School Health in partnership with the University of Waterloo, building on the university's School Health Action, Planning and Evaluation System (SHAPES). The planner includes assessment, planning and evaluation functions that address the four pillars of comprehensive school health and covers three health topics (healthy eating, physical activity and tobacco use). In addition to supporting a self-assessment approach by schools, the HSP offers the ability to report on aggregate environmental school health data at a regional level.¹⁷

Assessing the implementation of, or adherence to, nutrition policies that include nutrition standards presents a considerable challenge in Canada. First, the nature of food services varies within provinces and school districts: vendors may consist of large, international companies with food composition data available or private caterers who, because of their small size and insufficient resources, are not able to provide the detailed food composition data needed to determine whether the foods/beverages sold are consistent with nutrition policies. This is in contrast to the US, where there are meal-based standards available to evaluate the National School Lunch program and sufficient funding to support evaluation efforts.¹⁸ Currently, some provinces are assessing whether specific foods served at elementary schools are consistent with current nutrition standards found in nutrition policies.

Existing Tools (Physical Activity)

Given the wide variety of physical activities possible within a school setting, establishing a comprehensive set of measurement tools is challenging. In Canada, the SHAPES questionnaire contains a module related to physical activity in addition to its food environment content. The module permits the collection of information on individual student activity within the school setting, as well as data collection at the school administration level about physical activity programs and policies in the school.¹⁷ While not limited to the school environment, the CANPLAY survey¹⁹ in Canada uses pedometers to measure physical activity in children, whereas an example of a survey using self-reported data is the WHO Health Behaviours of School Aged Children survey, which is also conducted in Canada.²⁰ In addition to collecting information about food and nutrition, the US Centers for Disease Control and Prevention's School Health Policies and Programs Study examines a variety of physical activity policies and programs, and reports on the percentages of states, districts and schools with policies and programs related to different components of school-based physical activity.²¹

There are challenges associated with the use of current tools to measure the success of physical activity programs. Direct measurement devices such as pedometers and accelerometers are not ideal for all forms of activity, such as swimming and bicycle riding. Self-report surveys may lack some of the accuracy of direct measurement,²² and given the large number of choices in survey instruments²³ the results from one self-report questionnaire may not be comparable to those of another, making inter-jurisdictional comparisons difficult. A further challenge is that many measurements of physical activity among children and youth focus on activity for the whole day rather than just the school setting, adding to the difficulty of isolating and evaluating the contributions of school setting interventions towards meeting activity targets. The use of detailed activity logs or records can be used to identify school-based activity; however, they are time intensive and may be costly to implement in large-scale evaluations.²⁴

Knowledge gaps, future research directions

Differences in principal and school-wide support for policies, community involvement and resource availability^{25,26} can result in variations in the effectiveness of nutrition and physical activity policies.²⁷ It is thus critical to not only assess the impact of the policy on changes in the school environment, student behaviour (food intake, physical activity) and weight status but to also carefully document the nature of the policy intervention and assess the level of implementation of nutrition and physical activity policies.

A recent comprehensive review of policy and environmental approaches to creating healthy school food environments in the US²⁸ indicates that a variety of methods have been used to assess this environment, many of which are limited by self-report and non-response bias. A new system has been developed that will allow states to track changes in 11 policy areas, including school food, marketing and nutrition education.²⁹ There is a need to identify similar standardized measurement protocols, and nutrition and physical activity indicators that could be used within provinces and territories across Canada.^{7,29} While it is recognized that those involved in evaluation at the provincial/territorial level may choose to add measurements appropriate for their specific policy, accept-

ance of a set of evaluation methods and indicators would facilitate high-quality evaluations within provinces and would allow for comparisons and the identification of common challenges and successes at a national level. Regardless of the methods and indicators selected, it is important to consider the feasibility of conducting the evaluation, including the associated burden and expected level of cooperation from schools. The increasing complexity of the food supply and the resources required to conduct such audits are barriers to obtaining data in Canada.

Evaluations need to be undertaken with the recognition that it can be difficult to isolate the effect of specific policy interventions on student health and behaviours: it is challenging to identify the unique effects on physical activity level of policy elements such as access to after-school physical activities, physical education or equipment.³⁰ Further, instruments that evaluate food intake need to assess the changes in food use and/or nutrient intakes that are most likely to be affected by policy implementation. For example, a five-year project evaluating nutrition policies in Prince Edward Island elementary schools is assessing the changes in student food consumption at lunch that are likely to be affected by policy implementation. The evaluation is considering both the source of food and school adherence to the policy and will provide some much needed evidence in this area.⁴ Currently, there is no research exploring such questions among intermediate or high school students. A comprehensive approach to evaluation that uses a mixed methods system is more likely to provide important insights into the complex process of school change associated with the development and implementation of nutrition and physical activity policies.

One barrier to conducting high-quality evaluations of nutrition and physical activity policies is a lack of research capacity: there is a relatively small pool of researchers in the area of nutrition and physical activity evaluation in Canada. Increasing the capacity for planning and conducting effective evaluations at the district, province and national level is thus key.⁷ It is also crucial that adequate funding be made available to support research on the efficacy, effectiveness, cost-effectiveness and sustainability of school nutrition policies.³¹

CONCLUSIONS

Evaluation of Canadian nutrition and physical activity policies will enrich both our understanding of the policy process and its outcomes. It can inform decision-making, document changes to the policy, contribute to the evidence base and provide accountability. This paper has underscored the importance of identifying common indicators and approaches, using a comprehensive approach based on the WHO framework and ensuring that research capacity and funding is in place to facilitate effective evaluation efforts in the future.

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Diet and Physical Activity in Schools: Perspectives from the Implementation of the WHO Global Strategy on Diet, Physical Activity and Health

Vanessa Candeias, MPH, Timothy P. Armstrong, PhD, Godfrey C. Xuereb, MSc

ABSTRACT

Non-communicable diseases (NCD), such as heart disease, stroke, cancer and diabetes, are by far the leading cause of mortality in the world, representing 60% of all deaths. Unhealthy diets and physical inactivity are well-established risk factors for overweight and the major NCD.

In response to the rapid global growth of the NCD burden, the 2008 Action Plan on Prevention and Control of NCD and the 2004 Global Strategy on Diet, Physical Activity and Health (DPAS) have been developed and endorsed as key international policy instruments.

As part of the work of the World Health Organization (WHO) to implement these resolutions, a framework describing the core elements for the development and implementation of a national school policy focused on diet and physical activity has been developed. This framework is included in the "DPAS implementation tool box", and it aims to guide policy-makers in the development and implementation of policies that promote healthy eating and physical activity in the school setting through changes in environment, behaviour and education.

The article describes the key elements of the framework and details how this tool is integrated into other WHO activities to provide leadership, guidance, capacity building, evidence-based recommendations and advocacy for action to improve dietary practices and increase physical activity globally.

Key words: School policy; public health; education; health policy; nutrition; healthy eating; physical activity

Non-communicable diseases (NCD), mainly cardiovascular diseases, cancers, diabetes and chronic respiratory diseases, are by far the leading cause of death in the world, and their impact is steadily growing. In 2005, 35 million people died from NCD, which represented 60% of the total number of deaths in that year.¹

Moreover, unless addressed, the mortality and disease burden from these health problems will continue to increase. The World Health Organization (WHO) projects that NCD deaths will increase globally by 17% over the next 10 years. The greatest increase will be seen in the African region (27%) and the Eastern Mediterranean region (25%). This largely invisible epidemic is more serious in low- and middle-income countries, where 80% of all NCD occur.²

Unhealthy diets and physical inactivity are well-established risk factors for overweight and the major NCD.^{1,3} Noticeably, children are most affected by the increasing rates in obesity prevalence. It is estimated that in 2010, over 42 million children under the age of 5 years were overweight throughout the world. The problem is steadily affecting many low- and middle-income countries where close to 35 million overweight children live.⁴

The fundamental cause of overweight and obesity is an energy imbalance between calories consumed and calories expended. However, it should be recognized that, increasingly, such imbalances are the result of environmental and societal changes. Policy development and implementation in sectors such as agriculture, transport, urban planning, environment, food processing, distribution, marketing and education have contributed to the global increase in obesity and particularly childhood obesity.⁵ In addition, children in

low- and middle-income countries are more vulnerable to inadequate prenatal, infant and young child nutrition as well as more exposed to high-fat, high-sugar, high-salt, energy-dense, micro-nutrient-poor foods, which tend to be lower in cost. These dietary patterns, in conjunction with high levels of physical inactivity, result in low- and middle-income countries being disproportionately affected by the rapid increase in childhood obesity.¹

Global response to NCD burden

In response to the growing epidemic of NCD, WHO Member States provided a strong global mandate to increase attention to the prevention of NCD. The World Health Assembly (WHA), the supreme decision-making body for WHO, meets in Geneva in May each year and is attended by delegations from all 193 Member States. Its main function is to determine the policies of the WHO, and through its resolutions it provides the WHO Secretariat with the mandate to work on specific topics in response to the Member States' needs and priorities. To respond to the global NCD burden, milestone resolutions have been endorsed by the WHA and are outlined in Table 1.

Authors' Affiliation

Surveillance and Population-based Prevention Unit, Department of Chronic Diseases and Health Promotion, World Health Organization, Geneva, Switzerland

Correspondence and reprint requests: Vanessa Candeias, MPH, 20 Ave. Appia, CH-1211 Geneva 27, Switzerland, Tel: +41-22-791-3259, Fax: +41-22-791-1581, E-mail: candeiasv@who.int

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Conflict of Interest: None to declare.

Global Strategy on Diet, Physical Activity and Health (DPAS)

DPAS Development

DPAS was developed over a two-year period in consultation with Member States, United Nations agencies, civil society groups and the private sector, and endorsed in 2004 during the 57th WHA.⁵ DPAS is a comprehensive tool to guide the actions of Member States, WHO, international partners, civil society, non-governmental organizations and the private sector with the aim of promoting and protecting the health of populations through healthy eating and physical activity.

The consultations carried out during the development stage were instrumental in validating the importance of promoting healthy diets and physical activity on the agenda of all WHO regions. Moreover, DPAS endorsement by the WHA represented a major step forward in stressing that improvement of the diet and physical activity habits of populations was a societal issue and not just a matter of individual behaviour, therefore requiring a population-based, multisectoral, multidisciplinary and culturally relevant approach.

The objectives of DPAS implementation are integrated into the action plan on prevention and control of NCD, which was endorsed by the WHA in 2008.

DPAS Implementation: Actions by WHO at the Global Level

Since the adoption of DPAS by Member States in May 2004, WHO has been supporting DPAS implementation by providing technical assistance, guidance and tools to Member States; providing leadership, evidence-based recommendations and advocacy for international action; interacting with other UN agencies, global private sector and other relevant stakeholders; and by facilitating capacity building at regional and national levels on issues related to diet and physical activity.

Since 2004, WHO has organized over 25 regional capacity-building workshops. These workshops bring together Member States and representatives from various relevant stakeholders with the overall aim to strengthen the understanding, dissemination and utilization of the tools produced for DPAS implementation; support the development and implementation of regional or national policies and strategies related to diet and physical activity; facilitate intercountry cooperation in DPAS implementation; and foster the development of multistakeholder and multisectoral approaches. In these workshops schools as a setting for the promotion of healthy diets and physical activity have been an integrated part of an overall policy to prevent and manage NCD.

School Policy Framework

With the aim of providing technical support to Member States and other stakeholders in the implementation of DPAS and to facilitate capacity building at regional and national levels, WHO has developed a vast range of tools, which have been grouped in the "DPAS implementation toolbox".

Among other aids, this toolbox includes resources on the development and implementation of school policies on diet and physical activity, marketing of foods and non-alcoholic beverages to children, population-based approaches to increasing levels of physical activity, promotion of fruit and vegetables, reduction of salt intake in populations, prevention of NCD in the workplace through

Table 1. Global Response to Non-communicable Diseases (NCD)*

Year	Action by the World Health Assembly (WHA)
2000	Endorsement of a resolution requesting the WHO Secretariat to give priority to the prevention and control of NCD; and to provide guidance and technical support to Member States' work related to the growing epidemic of NCD (WHA Resolution 53.17).
2002	Called upon the WHO Secretariat to develop a global strategy on diet, physical activity and health.
2004	Endorsement of the Global Strategy on Diet, Physical Activity and Health (DPAS), providing WHO Secretariat with a clear mandate and responsibilities for work related to health promotion and primary prevention of NCD through diet and physical activity (WHA Resolution 57.17).
2007	Endorsement of a resolution requesting the WHO Secretariat to prepare an action plan for the prevention and control of NCD, to be submitted to the 61st WHA (WHA Resolution 60.23).
2008	Endorsement of a resolution and a six-year action plan on prevention and control of NCD (WHA Resolution 61.8). This approved action plan includes six objectives related to the prevention and control of NCD and differentiates recommended actions for WHO, Member States and international partners.

* Resolutions available through the link: <http://www.who.int/gb/>

diet and physical activity, and a practical tool for the monitoring and evaluation of diet and physical activity policies and plans at national levels. Further information on these tools can be found through the following website: <http://www.who.int/dietphysicalactivity/implementation/toolbox/en/index.html>.

School Setting: An Approach to the Implementation of DPAS

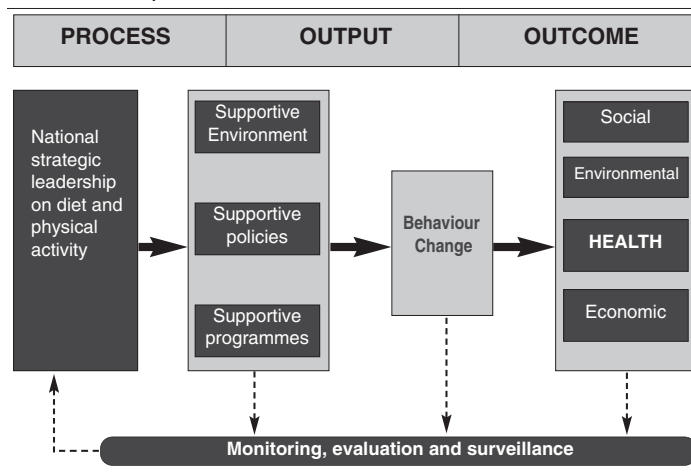
Building on various school health and nutrition programs of the United Nations System, a framework describing the core elements for the development and implementation of a national or sub-national DPAS school policy has been developed by WHO with the support of the Public Health Agency of Canada and Health Canada. As part of the framework development, these agencies commissioned two scientific background papers: *Physical Activity in Schools*, by François Lagarde and Claire LeBlanc, and *Healthy Eating in Schools*, by Mary McKenna. Subsequently, WHO organized an expert consultation in Vancouver, Canada, in 2007. The two background papers were used at the 2007 consultation to review and discuss current knowledge and evidence of national and sub-national school policies on diet and physical activity, and they represent the basis for the contents of this *CJPH* supplement in the two issue areas.

The overall purpose of the *DPAS School Policy Framework* is to guide policy-makers at national and subnational levels in the development and implementation of policies that promote healthy eating and physical activity in the school setting through changes in environment, behaviour and education.⁶ The framework is primarily intended for resource-poor settings, but many of its elements are also suitable for high-resource settings.

Although the *DPAS School Policy Framework* builds upon existing knowledge and experience, it adds a global policy tool that focuses on governmental action, and not on school action, to improve dietary patterns and increase physical activity in this setting. Therefore, it also strengthens the concept that supportive national or sub-national school policies are fundamental in assisting local schools in their efforts to promote healthy eating and physical activity.

The structure of the *School Policy Framework* is consistent with the scheme shown in Figure 1, indicating how national leadership

Figure 1. Schematic model illustrating how national leadership and implementation of supportive policies influence behaviours



on promoting healthy diets and physical activity in schools, supportive policies, programs and environments will be developed and implemented. Together, these are designed to influence behaviour change within the target population, leading to longer-term social, health, environmental and economic benefits.⁷

To start an effective national school policy, the DPAS *School Policy Framework* requests national strategic leadership and encourages governments to undertake the following: 1) set up a coordinating team to guide school policy development, implementation, monitoring and evaluation; 2) conduct a situation analysis; 3) develop a work plan and monitoring system; 4) set the goals and objectives; 5) disseminate and implement the policy.

The DPAS *School Policy Framework* provides various policy options that Member States can incorporate in their national or subnational school policies according to their needs, characteristics and resources. The suggested policy options for both diet and physical activity are presented in the following categories:

- School recognition – policy-makers are encouraged to develop a program that stimulates schools to promote healthy eating and physical activity and recognizes their efforts by, for example, awarding schools that provide healthy meals and/or have safe facilities for regular physical activity with a special status.
- School curriculum – policy-makers can develop school curricula that encourage healthy eating and physical activity in a cross-curricular manner (i.e., in science class, language arts, math and many other subject areas) and not just in health and/or physical education classes.
- Food services environment – policy-makers can adopt nutritional standards for school food; develop school food programs; improve the food service area and the foods and non-alcoholic beverages available in vending machines and school snack bars, etc.
- Physical environment – policy-makers may target the improvement of buildings and facilities, and development of extracurricular activities that foster physical activity and actions to facilitate safe walking and cycling to and from school. By improving the physical facilities in schools, policy-makers will encourage students to spend their recess time more actively.
- Health promotion for school staff – policy-makers can implement measures that facilitate the provision of in-service training on

healthy lifestyles, e.g., by organizing workshops held by nutrition specialists and physical education teachers.

- School health services – policy-makers can implement measures that facilitate the provision of basic health services in schools.

All these actions will contribute to the creation of an enabling environment that will facilitate the increase in physical activity and the adoption of a healthier diet by the target population.

As schematized in Figure 1, the outcomes of the behaviour change should be monitored and evaluated. This can be done through assessing changes in the health status of the targeted population and in several social, environmental and economic aspects, such as the increased availability of safe areas for physical activity and increased access (availability and affordability) to fruits and vegetables. Research, monitoring, evaluation and surveillance need to start early and continue throughout the process, so that feedback on any modifications required for the process can be provided to the institutions involved.

During this process, all interested stakeholders (e.g., ministries of health, ministries of education, interested governmental agencies, teachers and school staff, families, international organizations, non-governmental organizations and the private sector) need to be involved. The *School Policy Framework* document suggests how stakeholders can be engaged.

Policy-makers are encouraged, whenever possible, to adapt the generic DPAS *School Policy Framework* to existing structures and resources (technical staff, civil society, information, ongoing initiatives, policies, etc.). In doing so, consideration should be given to cultural background, gender issues, ethnic minorities and the jurisdictional and legal structure of the country, as well as to social inclusion and participation, in order to ensure that the most vulnerable populations are protected by the various policy options implemented. Policy-makers are also encouraged to ensure that a specific budget is allocated for implementation, monitoring and evaluation.

CONCLUSIONS

The WHO's *School Policy Framework: Implementation of DPAS* aims to guide policy-makers at national and subnational levels in the development and implementation of policies that promote healthy eating and physical activity in the school setting. As an additional instrument, the Framework will help to create enabling environments that facilitate positive behaviour change related to diet and physical activity habits.

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