

Monitoring and Evaluating School Nutrition and Physical Activity Policies

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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.

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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.

REFERENCES

1. Institute of Medicine. *Preventing Childhood Obesity: Health in the Balance*. Washington, DC: National Academies Press, 2005.
2. Raine K, Wilson E. Obesity prevention in the Canadian population: Policy recommendations for environmental change. *Can Med Assoc J* 2007;176(8):106-9.
3. Budd GM, Volpe SL. School-based obesity prevention: Research, challenges, and recommendations. *J Sch Health* 2006;76(10):485-95.
4. Dietitians of Canada. An overview of school nutrition policies. *Current Issues* September 2008. Available at: <http://www.livinghealthyschools.com/pdf/2008/Current%20Issues.pdf> (Accessed February 1, 2009).
5. McKenna ML. Issues in implementing school nutrition policies. *Can J Diet Pract Res* 2003;64(4):208-13.

6. World Health Organization. Global Strategy on Diet, Physical Activity and Health: A Framework to Monitor and Evaluate Implementation. Geneva, Switzerland: WHO, 2006. Available at: <http://www.who.int/dietphysicalactivity/Indicators%20English.pdf> (Accessed August 18, 2008).
7. Institute of Medicine. *Progress in Preventing Childhood Obesity: How Do We Measure Up?* Washington, DC: National Academies Press, 2007.
8. Lagarde F, LeBlanc CMA. Physical activity in schools: Background paper for the June 2007 Satellite Expert Roundtable on the WHO Global Strategy on Diet, Physical Activity and Health: A School Policy Framework, 2008 (unpublished).
9. Boyle M, Purciel M, Craypo L, Stone-Francisco S, Samuels SE. National Evaluation and Measurement Meeting on School Nutrition and Physical Activity Policies: Final Report, Meeting Proceedings. San Francisco, CA: Samuels & Associates, 2004. Available at: <http://epsf.asu.edu/ceru/Articles/CERU-0503-116-OWI.pdf> (Accessed August 19, 2008).
10. Illinois School Wellness Policy Task Force. Report on the Evaluation of Six School Districts on the Effectiveness of Wellness Policies, January 2008. Available at: http://www.isbe.net/nutrition/pdf/task_force_report.pdf (Accessed November 10, 2008).
11. Action for Healthy Kids: Wellness Tool. Available at: <http://www.actionforhealthykids.org/wellnesstool/Presentations/pres-out652.php> (Accessed November 8, 2008).
12. Finkelstein DM, Hill EL, Whitaker RC. School food environments and policies in US public schools. *Pediatrics* 2008;122:e251-e259.
13. O'Toole TP, Anderson S, Miller C, Guthrie J. Nutrition services and foods and beverages available at school: Results from the School Health Policies and Programs Study 2006. *J Sch Health* 2007;77(8):500-21.
14. Taylor J, Evers S, McKenna M. Determinants of healthy eating in children and youth. *Can J Public Health* 2005;96(suppl):S20-S26.
15. Ministry of Education and Ministry of Health, British Columbia. School Food Sales and Policies. Provincial Report II. Available at: http://www.bced.gov.bc.ca/health/healthy_eating/food_guidelines/food_survey_report.htm (Accessed Dec 2, 2008).
16. Government of Manitoba. Manitoba School Nutrition Survey, 2006. Available at: <http://www.gov.mb.ca/healthyschools/foodinschools/documents/survey.pdf>. (Accessed January 5, 2009).
17. Leatherdale ST, Manske S, Wong SL, Cameron R. Integrating research, policy, and practice in school-based physical activity prevention programming: The School Health Action, Planning, and Evaluation System (SHAPES) physical activity module. *Health Promot Pract* 2009;10(2):254-61.
18. Robert Wood Johnson Foundation Policy Brief. Improved child nutrition policy: Insights from a national USDA study of school food environments, 2009. Available at: <http://www.rwjf.org/files/research/20090102sndpolicybrief.pdf> (Accessed February 27, 2009).
19. Canadian Fitness and Lifestyle Research Institute. Kids CANPLAY! Encouraging children to be active at home, at school and in their communities. Bulletin Number 1. Resources and services. Ottawa, ON, 2008.
20. World Health Organization. Inequalities in young people's health: HBSC international report from the 2005/2006 Survey. In: Currie C, Gabhainn S, Godeau E, et al. (Eds.), *Health Policy for Children and Adolescents, No 5*. Copenhagen, DK: WHO Regional Office for Europe, 2008.
21. Lee SM, Burgeson CR, Fulton JE, Spain CG. Physical education and physical activity: Results from the School Health Policies and Programs Study 2006. *J Sch Health* 2007;77(8):435-63.
22. Bauman A, Phongsavan P, Schoeppe S, Owen N. Physical activity measurement – a primer for health promotion. *Promot Educ* 2006;13(2):92-103.
23. Tessier S, Vuillemin A, Briançon S. Review of physical activity questionnaires validated for children and adolescents. *Sci Sports* 2008;23:118-25.
24. Jago R, Anderson CB, Baranowski T, Watson K. Adolescent patterns of physical activity: Differences by gender, day and time of day. *Am J Prev Med* 2005;28(5):447-52.
25. MacLellan D, Taylor J, Freeze C. Developing school nutrition policies: Enabling and barrier factors. *Can J Diet Pract Res* 2009;70(4):162-208.
26. Foster GD, Sherman S, Borradaile KE, Grundy KM, Vander Veur SS, Nachmani J, et al. A policy-based school intervention to prevent overweight and obesity. *Pediatrics* 2008;121(4):e794-e802.
27. Ramanathan S, Allison KR, Faulkner G, Dwyer JJM. Challenges in assessing the implementation and effectiveness of physical activity and nutrition policy interventions as natural experiments. *Health Promot Int* 2008;23:290-97.
28. Story M, Kaphingst KM, Robinson-O'Brien R, Glanz K. Creating healthy food and eating environments: Policy and environmental approaches. *Annu Rev Public Health* 2008;29:253-72.
29. Masse LC, Frosh MM, Chiqui JF, Yaroch AL, Agurs-Collins T, Blanck HM, et al. Development of a school nutrition-environment state policy classification system (SNESPCS). *Am J Prev Med* 2007;33(4S):S277-S291.
30. Durant N, Harris SK, Doyle S, Person S, Saelens BE, Kerr J, et al. Relation of the school environment and policy to adolescent physical activity. *J Sch Health* 2009;79:153-59.
31. Brescoll V, Kersh R, Brownell KD. Assessing the feasibility and impact of federal childhood obesity policies. *Ann Am Acad Pediatr* 2008;615:178-94.