CIM article outline

**Introduction**

**Abstract**

**Background:** Comprehensive school health (CSH) approaches have often been associated with improved health outcomes in students, while their relationship to student school success has been less actively researched. One of the difficulties in understanding the connection between CSH and student achievement is the absence of indicators and measures.

**Objective:** The purpose of this study was to develop a set of core indicators and measures (CIM) by which the effectiveness of CSH approaches for student achievement could be measured and evaluated.

**Design and methods:** To accomplish this goal, the research team from the Social Program Evaluation Group (SPEG) of Queen’s University, in collaboration with the Pan-Canadian Joint Consortium for School Health (JCSH), referenced three data sources: scholarly literature, grey literature, and interviews with 24 experts from across Canada (two from each JCSH jurisdiction).

**Results:** Three groups of indicators (academic, success, and environmental) with three domains in each group (cognitive, behavioural, health, and affective) were developed. Multiple measures within each of the nine indicators were highlighted.

**Conclusion:** Research into the effectiveness of comprehensive school health as a process for enhancing the health and the success of students must expand in a Canadian context and reflect the inter-relationship of all four pillars of the JCSH Comprehensive School Health Framework : Teaching and Learning, Social and Physical Environment, Partnerships and Services, and Healthy School Policy. Research must move beyond assessing academic achievement, especially as measured singularly by standardized test scores, into a view of achievement that encompasses academic, success, and environmental indicators within cognitive, behavioural, health, and affective domains.

**Keywords**

Canada, comprehensive school health, student success, achievement, core indicators and measures

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**BACKGROUND**

*1. Statement on definition of Comprehensive school health (CSH). Statement on definition of student achievement.*

Comprehensive school health (CSH) is an internationally recognized framework for supporting improvements in students' educational outcomes while addressing school health in a planned, integrated, and holistic way. A whole-school approach to school health should not only influence student health but the entire school community (Pan-Canadian Joint Consortium for School Health [JCSH], 2014; World Health Organization [WHO], 1997). Student achievement is an encompassing term that includes academic achievement but reflects more broadly the accomplishment of articulated learning goals (Barton & Coley, 2009; Guskey, 2013). According to Bloom’s (1984) taxonomy, learning goals can be classified into three domains: cognitive, psychomotor or behavioural, and affective. This classification of learning helps emphasize a multi-faceted understanding of student achievement by focusing on multiple domains of achievement.

*2. Statement on paucity in research of Canadian context and of core set of indicators and measures to understand and study the connection between CSH and student achievement*: can take directly from Ex Summ:

Recognizing the lack of an evidence-based Canadian framework to understand the effects of CSH on student achievement, the Pan-Canadian Joint Consortium for School Health (JCSH) in the spring of 2013 commissioned the Social Program Evaluation Group (SPEG) at Queen’s University to develop a set of Core Indicators and Measures (CIM). The evidence basis for outcomes related to a CSH approach is limited; even more scarce is evidence (research and practice) in a Canadian context connecting a CSH approach with learning outcomes. Establishing an indicator and measure tool and contributing to the learnings in this area were deemed important by both the researchers and the JCSH team.

*3. Statement on JCSH:*

The JCSH is a partnership of federal, provincial, and territorial governments from across Canada, working together to promote the wellness and achievement of children and youth. Established in 2005 and representing the Ministries of Education and Ministries of Health, JCSH champions CSH as the approach for improving and reinforcing the interdependence of health and education. A Research Advisory Committee of representatives of JCSH was struck to assist the SPEG group in developing the CIM.

**METHODS**

*1. Statement on methods used:*

To understand how CSH enhances student achievement, the researchers and advisory committee believed the study required four components:

* A collection of existing tools / measures / indicators - located through both a review of the literature and key informant interviews
* A development process that included key stakeholders across policy, practice, research
* Face validation through member checking with the informants and end users
* A report which specifies the questions and indicators, how to derive the indicator from the question(s), process for development to give the resulting indicators some credibility with users: reliability and validity checks.

The SPEG team conducted a narrative review of peer-reviewed and grey literature and employed a confirmatory qualitative design to identify core measures and indicators from interviews with CSH and education experts across 12 of the 13 Canadian provinces and territories.

*2. Statement on rationale for these methods:*

**Selection of Resources**

The review of scholarly and grey literature by the SPEG research team, composed of three trained research assistants under the supervision of the principal investigator, Dr. John Freeman, included the following search terms: student achievement/health in Canada (and by name of individual provinces and territories); student achievement/health in the US/Europe, England, Finland, Sweden, France, Germany, Netherlands, Australia, New Zealand, school health and achievement; mental health program evaluations in schools (in Canada/US/Europe, England, Finland, Sweden, France, Germany, Netherlands, Australia, New Zealand); evaluations, reports, and reviews of academic achievement and school health; healthy schools evaluations; student health and well-being; student health and community; student health policies and practices; physical activity in schools; school safety and student achievement; and healthy eating and food programs in schools.

The purpose of this review was to explore evaluation processes, indicators, and measures pertaining to the relationship between holistic school health approaches and student achievement across Canada and a number of other countries. These countries were selected because they all subscribe to a formal holistic approach to school health and have cultural, social, and economic contexts similar to those in Canada. Canadian resources in the tables were identified by a small Canadian flag image.

All resources were published between 2000 and 2013. Ten scholarly articles and 10 English-language web-based documents were reviewed for each of the three domains – cognitive, behavioural, and affective – for a total of 60 articles from peer-reviewed and grey literature.

**Selection of Interview Participants**

*Statement on how interview participants were selected*.

Data collection for the second phase of the Core Indicators and Measures development was conducted through interviews with health education experts throughout Canada. The purpose of the interviews was to explore how the informants use a CSH approach in their work, and how they define student achievement.

The participants were chosen through a purposive sampling process (Creswell, 2007; Patton, 2002) established by the JCSH Advisory Committee. The School Health Coordinator(s) from each JCSH member province/territory submitted a list of names and contact information of potential key informants. To ensure anonymity, each province and territory was asked to supply more than two names of individuals with expertise in each of research, policy, and practice, with an emphasis on the education sector.

During the month of June 2013, the SPEG research team conducted the interviews with the 24 educational and school health specialists (e.g. school administrators, educators, school health coordinators, health practitioners), all with direct experience in the design and delivery of CSH initiatives and student achievement initiatives. Each was sent a copy of the questions prior to the interviews. All interviews were conducted by telephone or face-to-face and lasted approximately 45 to 60 minutes. The interviews were audio-recorded and selectively transcribed by the research assistants, who also took field notes during the interviews to enhance triangulation of the data. Participants were referenced in the final report using their category of expertise or their occupation (e.g., educational specialist, health specialist, school principal, or public health nurse), unless they consented to identification.

**Data Analysis**

Interviews were coded using a deductive thematic analysis based on three domains established at the outset of the project from articulated learning goals to measure student achievement. Out of the literature review and the interview, four sets of indicators were identified.

*I also do not have information on literature conclusions. Here’s my best guesses- well, based on CIM framework, review of this paper, and some of the literature.*

**FINDINGS**

**Theoretical, empirical basis of CIM framework**

A data extraction tool was developed to provide a descriptive synthesis of the 60 articles – scholarly and grey – identified for the review and organized into three sub-sections: cognitive, behavioural, and affective. Each article or document was summarized by the Comprehensive School Health pillar(s) reflected, the measure(s) of student achievement, methodology, location and study population, findings, and strengths and weaknesses.

The theoretical basis for the Core Indicators and Measures framework is Bloom’s Taxonomy of Educational Objectives (1956/1984), revised by Krathwohl (2002), and broadened and further explored by Guskey (2013), Brown and Latham (2002), and Barone and Eisner (2012. This typology discusses learning in three domains: cognitive – what students know and think, psychomotor or behavioural – what students do, and affective – how students think. These three: cognitive, behavioural, and affective became the domains for the framework.

The literature on student achievement from a comprehensive school health / healthy school lens places a whole child focus on achievement, taking the attention from standardized test results into a multi-faceted understanding of student achievement by focusing on multiple domains of achievement. The particular comprehensive school health framework of this study is that championed by the Pan-Canadian Joint Consortium for School Health, developed out of the World Health Organization and the Ottawa Charter for Health Promotion (1986). It has four separate but interdependent pillars: Teaching and Learning, Social and Physical Environment, Partnerships and Services, and Healthy School Policy.

This study is founded on two beliefs: (i) healthy students are better learners and better-educated individuals are healthier (Basch, 2011; JCSH, 2012; Saab, Klinger, & Shulha, 2009), and (ii) it is important to have accurate and appropriate indicators and measures for the purpose of evaluating programs and strategies to improve them and ultimately improve learning and health outcomes (Clift & Jenson, 2005; Stufflebeam, 1971).

*Comprehensive School Health shown by topical, not holistic, application*

The results of the review demonstrated that Comprehensive School Health is not reflected regularly as a **whole school or holistic process approach** *per se* (See Tables 1, 2, and 3 for results of the literature review). For example, in the Castelli et al. (2007) study, aerobic fitness alone was measured and the results showed a positive association with academic achievement (in math and reading). Two other studies demonstrated an influence of family and community influences on student health, but neither of these showed impact on student achievement in the broad definition of cognitive, behavioural, and affective success. Saksvig et al. (2005) found that the Sandy Lake First Nation Diabetes Promotion Program was significantly associated with increased knowledge, dietary self-efficacy, and dietary improvements.

However, topical application is a valid way to review comprehensive school health, provided that the topic – physical activity, for example – is viewed through the *approach* or *lens* used by the school. If the school has policies / guidelines / practices; if the social and physical environments are conducive to structured and unstructured forms of activity; if the curriculum, extra-curricular activities, and professional development of staff reinforce physical activity benefits; and if the whole community partners, particularly parents / guardians, are engaged in a physical activity commitment in the school community, then a CSH approach to physical activity initiatives is reflected. The study by Rivard, Deslandes, and Beaudoin (2011) used topics such as physical activity and healthy eating to demonstrate the need for greater school-family-community collaboration in enhancing and reinforcing the healthy school approach and the link between that approach and student achievement.

*Knowledge of School Community in a Comprehensive School Health or Healthy School approach*

The literature also showed that **stakeholder knowledge** of the school / school district’s commitment to a comprehensive school health / healthy school approach is key to awareness of and commitment to this approach as a pathway both to school community health and to student achievement. Rivard, Deslandes, and Beaudoin (2011) noted the Healthy School Approach (HSA) model (Québec) contributed to Pedagogical Renewal. This study and others (Flay, 2002; Levin & Soler, 2013; Puskar & Bernardo, 2007) reported on the involvement of a school team (administrators, educators, parents, students, health officials, community representatives) in the promotion and maintenance of a comprehensive school health lens to student achievement.

*Comprehensive school health approach / lens to health interventions*

Health interventions have become a standard aspect of school responsibility for decades (Dilley, 2009;

**Key Informant Evidence**

*Definitions of achievement*

Although the experts acknowledged the terms student achievement and academic achievement are often used interchangeably, all of them saw academic achievement as only one aspect of student achievement and achievement test scores as one indicator of student achievement.

Multiple definitions and measures of achievement are required to capture a full image of student achievement.

**Academic Indicators**

*Cognitive sub-set*

Both health and education experts recommended a move beyond traditional measures to determine success and achievement. A holistic approach would assist educators in measuring more than academic achievement to fully understand student achievement, and guide public health workers in moving beyond nutrition and physical activity as their sole means to improve student achievement. (p. 38).

There remains a strong affiliation with the baseline measurement format among experts and policy leaders in the two sectors. “[high student achievement is largely based] on performing well on standardized tests and learning the curriculum outcomes as outlined by the Department of Education. When I think about achievement, I think about mathematics scores, literacy scores. Things that are measured by the provincial government … for the provincial achievement test, and that’s why I think automatically about those two things” (Education Expert). (p. 39).

Convincing those adhering to baseline measures to consider more holistic definitions of achievement is possible if the initiatives in some way contribute to the test scores definition, through extra-curricular tutorials for example. (p. 40 1st para).

*Behavioural sub-set*

Students need to actually attend school and engage in schoolwork if they are to succeed academically. Test scores in a school improve because of the behaviour of students. Attendance / absenteeism and in-school behaviour / suspensions were considered by the key informants as reflecting directly upon achievement. (pp. 40-41).

*Affective sub-set*

Student self-actualization and self-regulation directly impacts achievement in school. Students who are feeling positive about their abilities and coping mechanisms, students confident in obtaining assistance when they seek help, students who are able to lower their arousal levels when anxiety or negative emotions increase, improve their academic outcomes. (p. 41).

Students who are in extreme situations and have few or no adult supports are often unable to express their needs or ask for help. They would benefit from resiliency training as part of a healthy school community. (p. 42).

**Success Indicators**

*Cognitive sub-set*

Success in achievement is defined and measured by the key informants as reflected in high school progression – moving through the course work, the grade levels, graduating with a high school diploma. “Achievement is sort of a continuum. ... It’s actually taking into account the context as well as the achievement or accomplishments” (Key informant, p. 44).

Post-secondary plans are also an indication of the success indicator, cognitive sub-set. Students are aware that they need to attain participation, attendance, and grade score levels if they want to graduate and pursue employment or further education. ““If children are graduating and feel capable of pursuing more learning or doing something else after high school to give them a decent income that allows them to thrive in society healthily then they are a success” (Key informant, p. 45).

*Behavioural sub-set*

Success is also measured by students’ outward behaviours: social skills, participation in extra-curricular activities, relationships with peers. Student leadership and participation in activities outside of school are considered important aspects for learning that contributes to school achievement and student success. A holistic understanding of student achievement includes community engagement by students as full participants in society.

*Affective sub-set*

Students’ mental health, well-being, and connectedness impact their achievement and success in school. Depression, mental illness, substance use, and / or suicidal ideations inhibit a student’s potential for successful achievement. Positive mental health has become recognized as an overarching indicator of success for the student. Indeed, mental health may be a central tenet of Comprehensive School Health approaches, as “positive mental health and well-being are the foundation for everything else” (Key informant, p. 49). One informant referenced a program used in some school districts in Canada to measure student affect and, as a result, “lots of schools are finding that a great majority of children feel that they don’t have healthy relationships with adults in the school, they don’t feel connected” (Key informant, p. 49).

**Environmental Indicators**

*Cognitive sub-set*

Health and education experts acknowledged that it is important for key stakeholders in a school to understand and commit to healthy programs and policies. A highly structured, team-based, strategic approach promotes this kind of understanding. Student knowledge of health issues is informed by the holistic approach of comprehensive school health, which ensures that formal and informal instructions are reinforced by the school’s social and physical environment, the practices and engagement of the school community and partnerships, and its policies and guidelines.

Teachers as role models are at the forefront of such messaging and so have to be current in their knowledge and understanding. Teachers will reinforce school policies and learnings and the healthy school environment when students see them drinking water, for instance, rather than pop. In this social learning environment, health messages become “part of the norm and is talked about from that perspective. That’s healthy” (Key Informant, p. 51).

*Behavioural sub-set*

The actions of the adults in the school community impact student outcomes. Parents, teachers, school administrators, community partners all have a role in the healthy practices and academic achievement of the children and youth. The relationship of families and the school make a difference in the success of the child. Similarly, professional development and training on understanding student social contexts can support teachers to “have a really clear understanding of who the student is and what their metacognitive approaches are to learning and how we can adjust pedagogy to support those specific profiles” (Key informant, p. 54).

*Affective sub-set*

The learning environment impacts student achievement; the more inclusive that environment is, the more connected all students feel within it. “Comprehensive school health strategies have been shown to foster school connectedness, which especially has an important contribution around mental health for students” (Key informant, p. 55). A safe, accepting environment is sustained through student and adult buy-in. “Everyone must buy in to healthy practices, including educators. When people buy in to school health and everyone is participating, student achievement follows” (Key informant, p. 58).

No student, no school, and no community exists in a vacuum when it comes to Comprehensive School Health. Environment takes into consideration student and community context: socioeconomic status, geographical location, food and home security, parental educational attainment.

**RESULTS AND DISCUSSION**

**Development of Indicators**

The interview questions were developed by the researchers based on the literature review and feedback from the advisory committee. From the interviews three indicators were developed: Academic, Success, and Environmental. Academic indicators reflected academic achievement: achievement test scores (cognitive), attendance (behavioural), and academic motivation (affective). Success indicators focused more globally on student achievement: high school progression (cognitive), student participation (behavioural), and mental health (affective). Environmental indicators reflected environmental contexts that tend to influence student achievement: stakeholder engagement (cognitive), school community (behavioural), and inclusive school environment (affective).

**Table 4: Common Indicators and Measures Framework / Freeman-Hussain – JCSH Healthy Schools Framework**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **COGNITIVE** | **BEHAVIOURAL** | **AFFECTIVE** |
| **ACADEMIC**  **INDICATORS** | *Achievement test*  *scores:* standardized tests, GPA, report cards | *Attendance:* absences,  lates, suspensions/expulsions | *Academic*  *motivation:* academic self- concept/self- efficacy, self- regulation, self- confidence, intrinsic/extrinsic motivation, coping strategies |
| **SUCCESS**  **INDICATORS** | *High school*  *progression*: graduation rates, graduating with Honours, credit attainment, drop- out rates, post- secondary plans | *Student participation*:  number of activities in which students participate, type of participation (e.g., leadership; on-task/off- task), variety of participation (in-class, extra-curricular, community), quality of participation (student engagement, peer relationships) | *Mental health:* well-  being, ill-being, suicidal tendencies, depression, school connectedness |
| **HEALTH**  **INDICATORS** | *Understanding of health:* physical activity guidelines, screen time limits, nutritious eating, dangers of substance use | *Health and health behaviours:* physical activity, screen time, eating patterns, body composition, substance use, sexual behaviour | *Motivations toward optimal health:* attitudes, perceived behavioural control, subjective norms |
| **ENVIRONMENTAL**  **INDICATORS** | *Understanding of*  *Comprehensive School Health:* student, teacher, school administrator, parent, community | *Adult engagement:*  parent and family member authentic engagement in school, teacher and administrator professional development, community partnerships | *Inclusive school*  *environment:* safety, accepting environment, positive school culture, healthy school “buy-in” |

**CONCLUSIONS**

(FROM Statement of Work)

The purpose of this project was to develop a set of Core Indicators and Measures (CIM) that will allow government Ministries, school districts, and schools to measure the effectiveness of CSH initiatives in improving outcomes in student achievement. Consistent measures allow for the generation and reporting of comparable indicators; the consistency of measures and indicators leads to advanced knowledge on what types of interventions work in different parts of the country with different types of schools, and with culturally, socially diverse groups of students.

The benefit of education on health outcomes is well known: highly educated individuals are more likely to enjoy longer lives and higher quality-adjusted life years (QALY). The reverse – that healthier individuals are more likely to excel in education – is also held to be true. Yet educators, mandated to provide test scores of student achievement, seek a way to measure the effect of health improvements on learning outcomes.

This project created a set of core indicators and measures (CIM) for the purpose of assessing the effect of Comprehensive School Health as an approach on improved student achievement. The results will provide Ministries, school districts, and schools with usable data to improve and support Comprehensive School Health approaches in the four pillars:

* + make available resources to enhance classroom teaching and learning;
  + determine the need for school and district policies and practices related to CSH;
  + establish strategies for supportive school environments; and
  + identify partnerships and services related to CSH that benefit student achievement.

Working through this process brought us not only to a Common Indicators and Measures (CIM) framework but also to five critical insights about that framework’s future use relating to the CSH four pillars, CSH philosophy, unit of analysis, statistical analyses, and research methods. First, insufficient attention has been paid in the literature to the CSH four pillars in that we found only one published study (Rivard et al., 2011) and three grey literature studies using all four pillars[[1]](#footnote-1). Therefore, data are largely unavailable about the synergy across these pillars to inform a CIM framework. Second, the CSH philosophy is grounded in the belief that student achievement extends beyond academic achievement, yet much of the current research on CSH focuses too closely on the positive effects of CSH on academic achievement. To the extent that research continues this focus, CSH proponents need to present a stronger case for how research needs to measure how the CSH approach impacts the broader elements of student achievement.

While the first two critical points relate to *what* we should study in regard to CSH, the final three points refer to *how* we should measure the nine indicators. First, the unit of analysis must be calibrated to the target of the initiative, the reach of the initiative, the length of the initiative, and the expected time for the initiative to take effect. A short-term initiative aimed at a specific group within a school, for example, should not be expected to have any measurable, immediate effect on the school as a whole. Second, school leaders need to be wary of statistical analyses. These analyses can be affected by the specific sample (sample at time point A might have more girls than the sample at time B), seasonality (winter results differ from those in the spring), and mediating factors. In addition, conclusions cannot be reached about trends based on two time-points. Finally, to understand the full range of effects, mixed methods research is the best approach to provide a comprehensive picture of Comprehensive School Health[[2]](#footnote-2).

1. From comments. These two paras need discussion. They are lifted from the report because they seem to be that document’s conclusion. Some points are useful; others perhaps less so in the context of a stand-alone article. It would be useful to have a discussion with John and the Committee members to see their take. In the meantime [↑](#footnote-ref-1)
2. In addition to the fact this will not be the actual last statement of the article there needs to be a statement on why mixed methods is the best approach – what it measures and why it offers the best answers. [↑](#footnote-ref-2)