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Evaluation of a health promoting schools program in a school board in Nova Scotia, Canada

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ABSTRACT

A Health promoting schools (HPS) approach aims to make schools a healthy place through a holistic approach that promotes a supportive 'school ethos' and emphasizes improvements in physical, social, and emotional well-being and educational outcomes. A HPS initiative in rural Nova Scotia (Canada) provided an opportunity for a population-level natural experiment. This study investigated student well-being and health behaviours between schools with and without HPS implementation and schools with high and low school ethos scores.

Student well-being, nutrition, and physical activity were examined in a cross-sectional survey of elementary students in Nova Scotia, Canada in 2014. Multiple regression was used to assess the relationship with student well-being using the Quality of Life in School (QoLS) instrument and health behaviours. The main exposure was attending one of the 10 HPS schools; secondary exposure was the school ethos score.

The overall QoLS score and its subdomain scores in the adjusted models were higher in students attending HPS schools compared to those in non-HPS schools, but the differences were not statistically significant and the effect sizes were small. Students in schools that scored high on school ethos score had higher scores for the QoLS and its subdomains, but the difference was only significant for the teacher-student relationship domain.

Although this study did not find significant differences between HPS and non-HPS schools, our results highlight the complexity of evaluating HPS effects in the real world. The findings suggest a potential role of a supportive school ethos for student well-being in school.

1. Introduction

School is an important part of a child's life, and the school years are considered a crucial period of childhood development (Eccles, 1999). Healthy child development in turn is associated with better health outcomes later in life (Mikkonen and Raphael, 2010). Schools offer an ideal setting for health promotion interventions as most children spend a large part of their day there (Baranowski et al., 2000; Veugelers and Fitzgerald, 2005a; Sacchetti et al., 2013). Many school-based health promotion interventions have traditionally focused on changing individual behaviour (Alvaro et al., 2011), rather than targeting broader social or environmental determinants that influence behaviour (Coburn et al., 2003). Multicomponent interventions in schools that combine educational, curricular, policy, and environmental elements are thought to be more effective than interventions targeting single components or behaviours (van Sluijs et al., 2007; Kriemler et al., 2011). Health Promoting Schools (HPS, also known as Coordinated School Health or Comprehensive School Health) is such a multicomponent intervention that emphasizes improvements in educational outcomes as well as physical, social, and emotional well-being (International Union of Health Promotion and Education, 2009). Internationally, HPS has been found to have small, but positive effects on health behaviours and some aspects of social well-being (Langford et al., 2014). Within Canada, there has been less formal research on HPS approaches; however, some studies have demonstrated effectiveness of HPS in improving children's health behaviours (Fung et al., 2012; Veugelers and Fitzgerald, 2005b; Reed et al., 2008; Naylor et al., 2006).

The framework is adapted from recommendations by the World Health Organization and focuses on fostering health and learning, engaging all school partners (staff, students, parents, and community),

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providing an environment that supports health, and implementing healthy policies and practices (World Health Organization, 2016). The Pan-Canadian Joint Consortium has developed a framework for comprehensive school health (CSH) in Canada that includes four distinct but interrelated pillars: Teaching and Learning, Healthy School Policy, Physical and Social Environments, and Partnerships and Services (Pan-Canadian Joint Consortium for School Health, 2016). The adaptability of HPS is an important feature as it ensures flexibility to diverse school contexts across the country (Veugelers and Schwartz, 2010; Keshavarz et al., 2010). However, this variability has also led to considerable uncertainty as to how HPS should be implemented and evaluated across schools (Deschesnes et al., 2003; Mũkoma and Flisher, 2004; McIsaac et al., 2015a).

School ethos reflects the various physical and psychosocial structures that may shape school environments (Parcel et al., 2003) and, in turn, influence the health and well-being of students. Although school ethos is understood as being an essential component of HPS (Samdal and Rowling, 2011; Rowling and Samdal, 2011), there is little published research on how it might influence HPS, and there are no existing measures of this construct. Implementation of CSH and HPS in Canada has varied according to jurisdictional support (Veugelers and Schwartz, 2010). In Nova Scotia, HPS has evolved to a provincial initiative that aims to create healthier school communities for all children in the province (McIsaac et al., 2015b; McIsaac et al., 2012). The HPS initiative is based on the needs and assets of individual school communities. With provincial funding and support, the Tri-County Regional School Board (TCRSB) began implementing HPS in some of its schools starting in 2006 with voluntary enrollment in the program ongoing. As of 2014, ten of the 18 elementary schools in the school board had adopted the HPS approach, setting the stage for a population health natural experiment (Hawe and Potvin, 2009). The objective of the current study was to compare student well-being and health behaviours between schools in the TCRSB with and without voluntary HPS implementation, thereby representing a natural experiment (Hawe and Potvin, 2009). The secondary objective was to compare the same student outcomes between schools with high and low school ethos as an additional measure for HPS implementation.

2. Methods

2.1. The TCRSB HPS approach

HPS in the TCRSB relies on school interest and the readiness of schools to become involved. Schools implementing a HPS approach receive funding to support planning, development, and implementation of school-based action plans. These plans are developed by "school action teams" that meet regularly and include school staff, community partners and students. A "school supporter," employed by public health, recreation, or the school board, works with each school to assist with planning, priority-setting and evaluation. These supporters represent a member of the board-level steering committee and ensure that school actions are consistent with the HPS approach. Each school determines its own priorities based on information collected from parents, students, and school staff regarding needs and community assets. Notably, schools not formally a part of the HPS initiative may still implement health-promoting activities, but do not receive specific funding or other HPS support described above. For example, all schools in the TCRSB receive funds to implement a mandatory provincial food and nutrition policy and after-school programs. The difference between HPS schools and non-HPS schools is that for HPS schools, these strategies would be part of a planned comprehensive program with additional funding and support. Those schools not enrolled in HPS may implement some programs independently, possibly by individual staff members, but not as part of a broader school plan (Tri-County Regional School Board, 2016).

2.2. Study design

Study design and procedures of the TCRSB HPS evaluation have been reported previously (Ghotra et al., 2016). The project was a cross-sectional evaluation of a natural experiment comparing TCRSB HPS and non-HPS schools. Data were collected in spring 2014 through a population-based survey of students in grades 4–6 (about 9–12 years old) and their parents in the TCRSB in Nova Scotia, Canada. The TCRSB is a rural school board in southwestern Nova Scotia covering an area of over 7000 km^2. Approximately 6400 students attend 27 schools in the TCRSB. Data collection included information on student health behaviour and well-being, and school environment through surveys with students, parents, school leaders, and teachers, along with an audit of the school environment. All 18 elementary schools with grade 4–6 students in the school board were invited to participate. Packages containing consent forms and a survey were sent home with all students to obtain parental consent. Trained research assistants visited schools to administer a survey to participating students that assessed physical activity and sedentary behaviour, self-efficacy, and quality of life in school, along with a version of the Harvard Youth Adolescent Food Frequency Questionnaire (YAQ) that was modified to reflect the Canadian context (Rockett et al., 1995). All participating students completed the questionnaires by themselves in their classroom as a group. The parent survey contained questions on sociodemographic factors, the home environment, their child's health and their dietary and physical activity behaviours. All eligible schools agreed to participate, and parental consent was obtained for 670 students resulting in a response rate of 46% (46% in HPS schools and 48% in non-HPS schools).

Ethics approval for this study was obtained from the Health Sciences Research Ethics Board at Dalhousie University (file #2013–3094). Informed written consent was obtained from the parents of participating children; children provided written assent. Permission for data collection was also granted from the TCRSB.

2.3. Outcomes

The primary outcome was the students' quality of life in school as assessed by the Quality of Life in School (QoLS) instrument, a measure of students' general well-being and satisfaction that is based on positive and negative experiences of school activities (Weintraub and Bar-Haim, 2009). The original version of the QoLS was developed and validated in the Hebrew language and consists of 37 items in four domains: teacher–student relationship and school activities, physical environment, negative feelings towards school, and positive feelings towards school (Weintraub and Bar-Haim, 2009). The current study used the English translation (by its creators) with some minor changes to the wording of some of the items (by the authors). Factor analysis in the current sample confirmed the 4-factor structure of the instrument and was used to remove three items, leaving 34 items in four domains (psychosocial, attitude towards school, school environment and teacher-student relationship) (Ghotra et al., 2016). Items were scored on a 4-point Likert scale (from "always true" to "never true") with some items being reverse scored; overall and domain scores were calculated by averaging the items in the respective scale.

Secondary outcomes were diet quality, physical activity, screen time, and self-efficacy. Diet Quality was assessed using the Diet Quality Index (DQI). The DQI is a composite score ranging from 0 to 100 that includes aspects of diet adequacy, variety, balance, and moderation, with higher scores indicating better diet quality (Kim et al., 2003). This score was calculated based on student responses on the YAQ that were linked with information from the Canadian Nutrient File database (Health Canada, 2015). Physical activity was assessed with the *Physical Activity Questionnaire for Children* (PAQ-C), which was filled out by the students. The PAQ-C is a self-administered, validated, 7-day recall instrument that was developed to assess general levels of physical activity throughout the school year for elementary students, including time spent during