

**Minnesota Heart Disease and Stroke Prevention (HDSP) Initiative
Literature Review – October 2004
Environmental Setting: Schools**

HDSP Literature Review Summary of School-based Interventions

A literature review was commissioned by the Minnesota Department of Health with funding through the Centers for Disease Control and Prevention (CDC) for the purpose of seeking out information and research regarding cardiovascular health. The intended use for the study was defined in five environmental settings.

- Community and Community Organizations,
- Healthcare,
- Land and Transportation,
- Schools, and
- Worksites.

Several questions were used in the formulation of the review in order to organize the information. These questions were addressed within the context of each of the defined environmental settings.

What is the evidence that environmental or policy change impacts behavior of individuals?

The socio-ecological model indicates that one's environment impacts one's behavior.¹⁰ Further defined, the home, community norms and risk factors present in the environments in which one lives, works and plays influences the choices one makes in regard to healthy living. Additionally, the macro-environment of institutions, government and other agencies, which enact and enforce policies, has impact on the behavior of not only individuals but populations.

Environmental Interventions

Environmental interventions can be defined as including changes to the economic, social and/or physical environments. Examples of this are:

- making low-fat choices available in cafeterias;
- marked walking paths and/or routes inside and outside of school buildings to encourage physical activity;
- school building is open and available to the public for walking or other physical activity on week-ends or other times school is not in session.

Policy Interventions

Policy interventions are defined as including laws, regulations, and rules (formal and informal). Examples of policy interventions are:

- laws and regulations that restrict smoking in public buildings;
- policies related to foods served at school events and/or in classrooms, in vending machines, etc.¹⁵

What does environmental or policy change mean in the school setting?

According to a recent document published in 2004 by the Centers for Disease Control & Prevention (CDC),¹⁵ environmental and policy change strategies recommended for school settings include the following:

- Raise awareness of signs and symptoms of heart attack and stroke, and the importance of calling 9-1-1; implement awareness interventions in the schools, and with related groups such as parent Teacher Organizations (PTOs).
- Work with Coordinated School Health Programs to implement curricula, consistent with State education standards, to increase awareness among students regarding signs and symptoms of heart attack and stroke and the importance of calling 9-1-1.
- Promote the implementation of school-based CPR training for faculty, staff, and students through after-school programs and extra credit opportunities.
- Implement policy- and systems-change interventions to address employees' access to care and management of blood pressure and cholesterol.
- Approach schools as work sites (see work site literature review for recommendations).

Additionally, school-based approaches to increasing both good nutrition and physical activity are considered essential at the primary prevention level in order to establish positive lifestyle habits.

What works?

The MMWR Weekly reports in the September 17, 2004 issue that a *coordinated, multilevel approach involving schools, communities, and policy makers is needed to increase participation in daily, quality PE (physical exercise) among all students.*¹² This may be particularly important for high school students, as physical activity levels tend to become less during adolescence.

For many years, no standard criteria existed that could be applied to evaluate a broad range of policies, programs, interventions and practices in school settings. Therefore, a project supported by a grant from The Robert Wood Johnson Foundation established criteria and scored 107 approaches. The criteria included both environmental and policy changes. Full results can be found in *An Action for Healthy Kids Report*.¹

Key Findings

Although this literature review is extensive, it is not exhaustive. The results of these studies suggest that school-based approaches to cardiovascular health should be comprehensive, gender and developmentally specific, and should extend beyond the school into the students' homes. The following studies are added to these overall themes.

- *Providing intervention for all children to avoid labeling*
School-based interventions improve heart health in children with multiple cardiovascular disease risk factors. The targeted population in this study included elementary school children, 7 to 12 years old. Eighteen elementary schools in North Carolina were involved for a period of eight weeks. Two approaches were used : 1) a classroom-based (public health) approach for all children, and 2) risk-based approach for those with identified risk

factors. It was revealed through the study that risk-based intervention required as many resources as classroom-based intervention, and achieved a lower level of improvement in target population's health. The authors suggest other factors may have contributed to success of the classroom-based intervention. Teachers may have used reinforcement at other times during the day. In addition, this age group may respond best to a unified, peer effort. Providing intervention for all children avoided "labeling" at-risk children.⁷

- *The 5 A Day Power Plus program*

The authors reported that the program increased lunchtime fruit consumption and combined fruit/vegetable consumption among all children. In addition, lunchtime vegetable consumption was improved among girls. Total daily fruit consumption and proportion of total daily calories from fruits and vegetables also increased. The program also helped raise parent awareness of the 5 A Day program. The authors concluded, "*The 5 A Day Power Plus program used a creative, behavioral, multi-component intervention to improve the fruit and total fruit and vegetable consumption of urban children in St. Paul.*"¹³

- *Replicated program of CATCH*

The intervention utilized a variety of strategies and activities which appeared to replicate the CATCH program. The results of the evaluation demonstrated the "*overwhelming success*" of the program, especially with regard to nutrition and physical activity. They reported changes in the school environment and individual behavior change within students and staff. In addition, 94% of parents said they found the nutrition information from the schools helpful. Teachers reported that school lunches appeared more nutritious, there were fewer junk food items available to students and there were a greater number of hours of physical activity (PA) available to the students. The authors also reported they were able to secure continued funding for the program and were able to establish an intervention model that can be used by other schools. These findings were published in Ontario's Heart Health "*What Worked for Us*" catalog.¹⁶

What are the lessons learned?

Challenges to Successful Interventions

- *Need for parent involvement*

The Minnesota Home Team – is an example of an early intervention conducted from 1985-1986. This intervention targeted all Grade 3 students in 31 schools in Minnesota and North Dakota. Although students in the school-based intervention gained knowledge and skills, this did not necessarily lead to changes in their behavior. This suggests that school-based interventions are effective in providing a foundation for making decisions, but parental involvement may be necessary to achieve significant dietary changes in children.¹⁴

"Future investigations need to be conducted on how to maintain parent interest for what is taught in the classroom may be untaught at home."¹⁷

- *Rethinking physical education*

Rethinking physical education (PE) can help students lead healthier lives. A discovery of why students are minimally active during physical education (PE) included the following: waiting turns, too much time for roll call, team sports do not allow everyone to attain moderate physical activity (PA), and multi-activity format does not allow confidence building in one area.⁸

- *Continued intervention throughout the school years*

Schools are an important setting for programs to influence the development of healthy behaviors at a young age. For behavior change to occur and be in persistence of new goals, programs must continue past elementary to junior and senior high school.¹¹

Where are the gaps in the literature?

There is a need for comparable studies of school-based interventions which focus on specific interventions with multi-component, long-term studies of risk behavior intervention.

At the time of the literature review there have been few examples of American Indian and other diverse cultural group interventions. Only one Native American community-based diabetes education program was identified in the peer review literature.²

Additionally, viewing the school setting as a work site was not reflected in the literature reviewed.

What has been done in Minnesota?

Two articles included in this literature review cited school-based approaches implemented in Minnesota—those were the *5 A Day Power Plus* and Parent Involvement with Health Promotion. However, multiple interventions related to cardiovascular health are being implemented in Minnesota schools but not reflected in the literature. These include but are not limited to:

- policies related to vending machine food choices;
- policies related to allowing water in the classroom vs. soda pop;
- lobbying for legislation that will provide for daily physical activity for all students;
- policies and environmental changes related to school lunch choices; and
- culturally specific (Native American) curriculum focusing on improving nutrition and increasing physical activity.

In time, the hope is that as these strategies are evaluated and documented, the literature will reflect their effectiveness and lessons learned during implementation.

Summary

The key findings of this literature review support the implementation of school-based health promotion programs. In addition, schools need to give attention to the school as a work environment to impact adults at risk for heart disease and stroke.

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