

Kahnawake Schools Diabetes Prevention Project (Canada-Research-based)

<http://www.ksdpp.org/>

Section I: Summary

Type 2 diabetes has become increasingly prevalent among Canada's Native communities, particularly among Native youth, who have a higher incidence of obesity and diabetes than non-Native youth. The Kahnawake Schools Diabetes Prevention Project is a program for elementary school children designed to give early intervention and education for diabetes prevention in a Kanien'kehá:ka (Mohawk) community in Quebec, Canada. The community-based program showed some initial positive outcomes, however over a ten-year period positive changes in lifestyle and healthy behaviors were not sustained.

Section II: Statement of Purpose

The Kahnawake Schools Diabetes Prevention Project (KSDPP) began in 1994 as a three-year community-based research project, and through public and private funding it continues as an active program in Canada's Native Mohawk community. The community-based program emphasizes role-modeling and self-care activities among both children and their families. The philosophical and ethical basis for the program is grounded in traditional Mohawk values of respect, group decision-making, and planning for future generations. Together, these helped establish the program's key concepts, including creating supportive environments, strengthening community action, increasing personal action, reorienting health services, and building public policy around diabetes prevention. The primary outcome goals of the KSDPP are to reduce the prevalence of obesity, high-calorie and high-fat diets, and physical inactivity among Kahnawake elementary-school children.

Approximately 600 children attend two elementary schools (one English, one traditional Mohawk language). Local community nurses and a hospital dietician developed a culturally appropriate diabetes prevention curriculum specifically for the elementary schools, with a focus on lifestyle, physical activity, nutrition, and diabetes education. The curriculum is delivered in ten 45-minute sessions each year for all six grades of elementary school. Teachers are supported in implementing the curriculum and creating healthy lifestyle activities for students and themselves. Role modeling is also encouraged and promoted through professional development activities for teachers and parents.

Community outreach and activities are also incorporated in the program. Print and radio advertising help promote contests and events such as treasure hunts, snow sculpture contests, biking, walking, and dancing clubs,

harvest fair, and food tastings. These activities serve to reinforce classroom learning with actual participation in exercise and healthy choices and also promote role-modeling opportunities. The KSDPP also partners with community organizations such as the Kahnawake Youth Center and local health and human services agencies. Through collaboration, the community also constructed a walking/biking path to promote physical activity.

The program also fosters changes in policy to improve and promote healthy lifestyle choices. KSDPP supported the school nutrition policy that bans junk food on school premises and at school events, and teachers and parents organize to plan healthy breakfasts and snacks for students. A Community Advisory Board guides all aspects of the KSDPP and helps promote participation and communication of program activities.

Section III: Outcomes

An 8-year outcome evaluation was conducted (1994-2002) to determine the impacts of the program and compared the Kahnawake group with a nonequivalent comparison group of children in a second Mohawk community 200 miles away from Kahnawake. (Note: Data was collected from the comparison group for the first two years only, at which time the comparison community implemented its own diabetes prevention program.)

A variety of physical measurements were taken, including the childrens' weight, height, body mass index (BMI), and triceps and subscapular skinfold thickness. Sociodemographic and lifestyle data were collected through questionnaires completed by either the parents (for younger children) or by the students themselves. Physical activity was measured through a "7-day recall" survey instrument which assesses the number of 15-minute episodes of physical activity, and through a run/walk test. Survey data was also collected on sedentary behaviors such as time spent watching television and playing video games. Dietary habits were assessed from a food frequency questionnaire linked to indicators of high sugar consumption, high fat consumption, and fruit and vegetable consumption.

In the first two years, the children in the KSDPP intervention community showed significantly slower increase in skinfold thickness than the comparison children. However, this did not translate into a lower rate of increase in BMI for intervention children compared to comparison children. Likewise, the intervention children did not have better outcomes in the physical activity measures than the comparison children. The KSDPP children reported a significant decrease in the amount of gym time at school between 1994-96 (comparison children reported an increase), and the comparison children improved on the run/walk test while the performance of the KSDPP children actually declined. Regarding sedentary behaviors, the KSDPP children showed a marginal decrease in television viewing during the weekdays compared to the comparison group, but there was no overall

change on Saturdays. Dietary outcomes were also not significantly different between the two groups with regard to sugar, fat, and fruit and vegetable consumption.

A cross-sectional analysis of the KSDPP intervention group was also conducted for the period of 1994-2002, with mixed results. In 2002, students were at significantly higher risk of having higher BMI and skinfold thickness compared with baseline. However, significant initial improvement was seen in the number of physical activities and overall fitness, and television watching decreased. Unfortunately, by 2002 those improvements had disappeared. The children did experience significant decreases in consumption of high-sugar and high-fat foods throughout the eight years studied, with 65% to 70% reductions in the risk of consumption of these food items in 2002. Again, however, this positive outcome was accompanied by a significant decrease in fruit and vegetable consumption.

Overall, the primary goal of reducing obesity and diabetes risk in Kahnawake school children was not achieved. Community members suggested some factors that may have limited the effectiveness of the program. For example, an increase in overall community wealth and disposable income in the previous decade, combined with the appearance of multiple fast food restaurants in the area may have negatively impacted dietary habits. Also community members suggested that an increase in dual-working families may lead to less supervision of children's eating habits and activities. Finally, the community's perceived importance of computer literacy for youth may have also contributed to a more sedentary lifestyle for some children. The decrease in gym class hours could be explained by a cut in school budgets which resulted in fewer physical education classes offered.

Interviews with teachers over the course of the study also indicated that adherence to the program's educational curriculum varied. Some teachers taught all ten lessons each year, while others did not. Some teachers were also not as strict with the nutrition policy and ban on junk food in the schools. Positive outcomes may be limited when there is not a strong, structured adherence to the program components. It's also interesting to note that during the same general time period of the study there was also an increase in body fat and obesity among the general Canadian population as whole, including children. It may be that national influences, such as television food advertising and changing cultural habits, are presenting additional barriers to success and might warrant more intensive programs or additional strategies to achieve long-term lifestyle changes.

Section IV: Additional Resources

Kahnawake Schools Diabetes Prevention Project, P.O Box 989, Kahnawake Territory, Mohawk Nation, via Quebec, Canada J0L-1B0
Telephone: 450-635-4374, E-mail: info@ksdpp.org

Macaulay, Ann, Alex Otsehkoton McComber , and Rita Stalk McComber, The Kahnawake Schools Project: diabetes prevention in the Mohawk community, *Diabetes Voice*, June 2006, Vol. 51(2), <http://www.diabetesvoice.org/en/articles/the-kahnawake-schools-project-diabetes-prevention-in-the-mohawk-community>.

Paradis, Gilles, Lucie Lévesque, Ann C. Macaulay, Margaret Cargo, Alex McComber, Rhonda Kirby, Olivier Receveur, Natalie Kishchuk and Louise Potvin, Impact of a Diabetes Prevention Program on Body Size, Physical Activity, and Diet Among Kanien'kehá:ka (Mohawk) Children 6 to 11 Years Old: 8-Year Results From the Kahnawake Schools Diabetes Prevention Project, *Pediatrics*, 2005, Vol. 115(2): 333-339, <http://pediatrics.aappublications.org/cgi/content/full/115/2/333>.