



ORIGINAL RESEARCH PAPER

Brighter Smiles Africa - Translation of a Canadian Community-based Health-promoting School Program to Uganda

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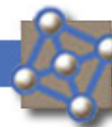
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ABSTRACT

Project goal: To adapt a successful Canadian health-promoting school initiative to a Ugandan context through international partnership.

Rationale: Rural children face many health challenges worldwide; health professionals in training understand these better through community-based learning. Aboriginal leaders in a Canadian First-Nations community identified poor oral health as a child health issue with major long-term societal impact and intervened successfully with university partners through a school-based program called "Brighter Smiles". Makerere University, Kampala, Uganda (MUK) sought to implement this delivery model for both the benefit of communities and the dental students.

Key steps/hurdles addressed: MUK identified rural communities where hospitals could provide dental students with community-based learning and recruited four local schools. A joint Ugandan and Canadian team of both trainees and faculty planned the program, obtained ethics consent and baseline data, initiated the Brighter Smiles intervention model (daily at-school tooth-brushing; in-class education), and recruited a cohort to receive additional bi-annual topical fluoride. Hurdles included: challenging international communication and planning due to inconsistent internet connections; discrepancies between Canadian and developing world concepts of research ethics and informed consent; complex dynamics for community engagement and steep



learning curve for accurate data collection; an itinerant population at one school; and difficulties coordinating Canadian and Ugandan university schedules.

Accomplishments: Four health-promoting schools were established; teachers, children, and families were engaged in the initiative; community-based learning was adopted for the university students; quarterly team education/evaluation/service delivery visits to schools were initiated; oral health improved, and new knowledge and practices were evident; an effective international partnership was formed providing global health education, research and health care delivery.

Keywords: Community-based learning, child health education, determinants of health, health-promoting schools, global health, oral health.

Introduction

Background – Health-promoting Schools

The World Health Organization (WHO) has developed the concept of “Health-promoting Schools”¹. Such schools provide information and support systems capable of generating the changes in behavior needed worldwide to improve health globally and to decrease health care costs. WHO recognizes that improving health behaviors also results in an increase in children’s capacity to learn. Health-promoting schools strive to create an environment promoting physical and mental health, both within the school and in the community. Although some have attempted to create health-promoting schools in a single large step, we developed a progressive model that is based on the principles of respect, different ways of knowing², symbiosis (input from, and benefits to both the community and the university team members), collaboration, shared leadership, and community-set priorities and pace of change.

Background - Brighter Smiles Canada

“Brighter Smiles” is a Canadian child health initiative developed to address the health issues of a remote aboriginal community. How the program developed is described elsewhere in detail^{3,4}. The model requires a trusting relationship between the partners (community and university), a desire to learn from each other, and agreement to collaborate to address community-identified health issues. Accordingly, the Brighter Smiles program involves:

1. Effective dialogue (listening and discussion) between the community and university partners with the goal of identifying the health issues of concern to the community
2. Initial selection of a single health issue that is both relevant to the community and feasible to address (success with simpler issues often leads to the confidence and ability to address other or more major concerns)
 - a. Oral health was selected by the index aboriginal community for several reasons: it is the most common infectious disease affecting children worldwide⁵; it is linked to an increased incidence of coronary heart disease, stroke, diabetes and premature labor^{6,7}; and caries and gum disease do not carry the stigma associated with health issues related to alcohol or abuse. Furthermore, significant improvements could potentially be achieved through a simple, inexpensive, community-driven intervention, with the presence or absence of program efficacy measurable over a short time frame.



3. Presentation of effective options for intervention by the university
4. Selection of the preferred intervention by the community
 - a. A school-based oral health education program (health-promoting school model) was selected.
5. Collaborative planning of the logistics of program delivery, particularly with school teachers and parents, and methods for evaluation
6. Implementation of the intervention with ongoing evaluation

Brighter Smiles Canada led to improvement in community oral health knowledge, practices and status. The success the community experienced through the health-promoting school initiative generated confidence leading to further dialogue with the university partners and then expansion of the program to address other community-identified health concerns. These included providing well-child examinations and immunizations, researching nutrition practices⁸, screening all children for type 2 diabetes—a condition for which aboriginal populations have both genetic and environmental propensities—and implementing dialogue for an education and prevention program for type 2 diabetes⁹.

Brighter Smiles Africa - Rationale

Faculty and students at Makerere University in Kampala (MUK) heard about Brighter Smiles Canada. They asked its organizers to help them adapt the program to the Ugandan context to provide community-based learning opportunities for MUK students and pilot the use of health-promoting community schools as a means of enhancing child health education and improving healthy behaviors. Unlike the program in Canada, the initial focus of oral health was chosen by MUK and not by the participating communities because of Canada's success with this intervention. Further, as in many developing countries, poor oral health is a concern in Uganda, with an increasing prevalence of caries¹⁰ and about 30% of school children affected by oral health problems¹¹.

The goals of the partnership between the MUK and the University of British Columbia (UBC) were:

1. to establish health-promoting schools in rural Ugandan communities by using the Brighter Smiles model.
2. to improve children's oral health, to provide community-based learning opportunities for MUK dental students, to develop mutual expertise in preventive health education and promotion of child health in a global context, and to create and expand educational opportunities and research capacity for both universities.

Translation and implementation steps

Teambuilding: The project was developed collaboratively by MUK and UBC, initially using electronic communications to agree upon goals and plan timelines. UBC team members travelled to the Canadian community where "Brighter Smiles" began to ensure they had first-hand experience with the logistics and delivery model and were aware of the need for sensitivity when working in a different cultural environment. In parallel, MUK recruited interested students from their campus, selected the specific intervention, which included (daily school "brush-ins" and oral health education) with one cohort receiving additional topical fluoride application, sought community buy-in, and initiated the selection of community schools to participate. Two UBC members then travelled to Uganda to orient the MUK student team to the Canadian program's concepts and the rationale underlying health-promoting schools, develop rapport, and refine the partnership's educational goals. Then a combined MUK/UBC team of two faculty, two pediatricians and 12 students worked in Uganda to initiate the program.



Project Development: To be selected as a health-promoting school site, a community had to be accessible by public transport and have a hospital that would take students and provide community-based education. Schools had to have parents who were interested in the program, and teachers who were prepared to include health topics in the curriculum and who were supportive of the at-school tooth brushing program. Schools also needed to accommodate quarterly visits by student-faculty teams to provide health education and examine and treat children.

Logistics: MUK developed community-based learning objectives for dental students and addressed the logistics of their travel and accommodations and the distribution of toothbrushes, toothpaste and fluoride within the communities. The collaboration between MUK and UBC obtained the modest funding support required, with UBC donating air travel. The collaboration also defined the research questions and developed evaluation tools, obtained ethics approval, solved logistic issues unique to Uganda such as how to identify and store each individual's toothbrush, (communal storage of numbered toothbrushes was organised, in Canada, individual children keep their brush in their desk).

Engagement: MUK students and faculty travelled to the four communities selected, where they oriented the school principals, teachers and parents via formal presentations to the relevance of oral health, the benefits of tooth brushing and topical fluoride application, and the ability of health-promoting school partnerships to progress from their initial focus to address other health issues. School supplies—textbooks, pens/pencils, soccer balls—were given in recognition of the time and commitment these individuals were asked to invest. In keeping with MUK ethics practices, consent was obtained at public presentations where a Yes/No response to participation was requested from the parents present. Only one family declined. Parents who were not present were deemed to have consented.

Baseline and initiation: Baseline data were collected on children's demographics, oral health practices, diet, and a score of decayed, missing and filled teeth. Toothbrushes and toothpaste were either donated by Canadian dentists or purchased at cost in Africa. Fluoride was donated by an anonymous donor to the BC Children's Hospital Centre for International Child Health and partially paid for by a grant from the University of British Columbia Special Populations Fund. To our knowledge this was the first use of topical fluoride varnish as a preventive measure in sub-Saharan Africa. Storage cupboards containing racks with numbered holes were designed to hold the toothbrushes to avoid cross-contamination leading to infections, and local carpenters were hired to make them. Teachers were instructed how to teach and lead daily at-school tooth brushing for their class. Educational materials for in-school teaching were developed collaboratively by MUK and UBC students to ensure local language content and cultural relevance.

Maintenance: Each month three MUK students went to the participating communities to repeat the health education concepts and reinforce brushing practices.

Support and Evaluation: From the second year on, a UBC-MUK team visited each health-promoting school community annually. While there, they supported the program, collected demographic and caries data, examined all of the enrolled children's teeth, and interviewed stakeholders to find out their perceptions of the program's benefits and to develop any modifications and improvements required (figures 1 and 2).



Figure 1. Makerere University, Kampala and University of British Colombia team members teaching at the Kalisizo health-promoting school



Figure 2. Examining and applying topical fluoride with children in the Brighter Smiles Africa program



Hurdles and solutions

A number of issues and hurdles were encountered in applying the Brighter Smiles program to Uganda:

- Effective communication between international partners is essential in a collaborative relationship. Interrupted internet services in Uganda caused problems for the collaboration, sometimes requiring more expensive telephone communications as backup.
- North American research involving children requires written informed consent by parents and informed assent by children. This was inconsistent with current concepts of consent in the developing world, and extra effort was required to ensure each team's understanding of the ethical steps required and institutional approval.
- Establishing community support requires time, mutual respect and shared leadership. Because the University team's timeline to implement Brighter Smiles Africa was short, community buy-in was initially only partially established. Over time, full engagement was achieved.
- Cultural and language barriers and inexperience initially compromised data collection. Data processes improved with additional instruction, better question construction, and experience.
- One community had seasonal employment, hence an itinerant population which caused progressive attrition of students from the school. As new children joined the school they were welcomed into the program and those departing were given their toothbrush and toothpaste. MUK and UBC run different academic schedules leading to scheduling conflicts. This required creative adjustments and care when booking activities.

Accomplishments

From 2006 through 2009, 52 MUK and 39 UBC team members have collaborated to deliver this community-based health education and prevention program. Four health-promoting schools were established and more than 2500 children enrolled. Formal data on the children's dental status is not included as this project and ongoing evaluation continue, and data will be published separately. Informally, we hear teachers report noticeable improvements in the oral health of their children (e.g. "their mouths no longer smell", "they have less pain and fewer absences from school for emergency treatment"), and express continued enthusiasm for and demonstrate full participation in the daily brushing program. We also see that children are teaching their siblings and parents what they are learning about health. Teachers and parents value discussions of their concerns about other health issues with the team. Efforts have been made to expand the program to address parents' health concerns, so that the program now includes topics in nutrition (school garden planting to feed hungry children), malaria prevention, and diarrheal disease prevention through hand washing practices, use of clean water and sanitation. Teachers credit the program with generating more positive attitudes towards health-related practices for the whole community.

Both university teams perceive positive outcomes for the initiative based on the annual examinations of the children's teeth, review of children's health knowledge and practices, formal evaluation data from teachers and parents, and the information learned through a recent participatory workshop held to obtain feedback from stakeholders. MUK has achieved its goal of establishing new community-based educational opportunities for all dental students. Written evaluations indicate that all students value the unique knowledge and experiences gained through participation in the program in rural communities. Some are now considering rural practice activities as a career option and intend to establish other health-promoting schools. Many wish they had been able to spend more time in the schools and provide more education to parents and community leaders. UBC team members report having gained new insights into global health and the broader determinants of health. They feel that they now have a greater understanding of the



needs of African families and communities, particularly of the availability of clean water and sanitation, malaria prevention, and practices to decrease diarrheal diseases, and they have greater interest in practicing in a developing country. Their experience has led faculty and students to drive curriculum change at their university to include formal global-health content in mandatory courses.

Both teams value collaborative learning, evaluation, research and joint opportunities to present and publish. The project continues, with more health-promoting schools anticipated and the project's expansion now addressing other community-identified child health concerns and including content and activities relevant to the WHO Millennium Development goals¹².

Discussion

The Brighter Smiles program has proved to be an excellent platform for the development of a symbiotic relationship between developed and developing world university students and between universities and rural communities. It has shown the feasibility and relevance of health-promoting schools in Uganda. After establishing the program using the promotion of oral health, a simple, achievable task where success generated enthusiasm and confidence, community-identified issues then drive the direction of the relationship between the communities and the university and expand the scope of the health education content and range of healthy behaviors promoted. Health-promoting schools provide a practical and effective health intervention at low cost, with measurable outcomes of success over a short timeframe. Communities in other countries can replicate the key features and steps of this methodology to establish similar health-promoting school partnerships.

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