Brighter Smiles

Service Learning, Inter-professional Collaboration and Health Promotion in a First Nations Community

Rosamund L. Harrison, DMD, MS
Andrew J. MacNab, MB, MD
Damian J. Duffy
David H.J. Benton, BComm, LLB

ABSTRACT

Objective: The goal of Brighter Smiles was to improve children’s dental health in a remote First Nations community in British Columbia in the context of a service-learning experience for pediatric residents.

Setting and Participants: The provincial Ministry of Health had competitive funds available for collaborations between remote communities and medical educators. Hartley Bay (Gitga’at), a tribe of the Tsimshian Nation, responded by declaring children’s dental health to be a primary health concern. This northern community has an on-reserve population fluctuating around 200 people and is accessible only by air or water.

Intervention: A convenience sample of children had a baseline dental exam; parents also completed a questionnaire about dental health behaviours. Only 31% (4/13) of pre-kindergarten and 8% (2/26) of kindergarten to Grade 12 children had no dental caries. Planning of the Brighter Smiles intervention involved community leaders, teachers, parents, Elders, health care staff, pediatrics residents, and dental and medical faculty from the University of British Columbia (UBC). Brighter Smiles includes school-based brush-ins, fluoride programs, classroom presentations, and regular visits by UBC pediatrics residents to Hartley Bay to provide well-child care that includes age-appropriate dental counselling to parents at the clinic visits.

Outcomes: An early success indicator was a significantly increased proportion of dental service provider’s time scheduled for preventive maintenance services rather than dental rehabilitation (restorations and extractions).

Conclusions: The goal of providing a service-learning experience for trainee pediatricians in a remote community has been achieved. In addition, early indicators demonstrate improvements in child oral health.

MeSH terms: Rural health services; education, medical, graduate; health promotion; oral health; ethnic groups

La traduction du résumé se trouve à la fin de l'article.
**SETTING, PARTICIPANTS AND INTERVENTION**

**Setting**
Hartley Bay (Gitga'at), part of the Tsitsian Nation, is a First Nations village located on Douglass Channel, 135 km south of Prince Rupert, BC. About 200 people are resident in Hartley Bay. Transportation in and out of the village is by boat or float plane. The community is built around a network of boardwalks and all movement is on foot, or by all-terrain vehicles or water transport.

Prior to Brighter Smiles, regular pediatric services were not available in the community. A First Nations Inuit Health Branch (FNIB) dental therapist provided intermittent dental treatment services. Community-wide or school-based dental prevention programs did not exist. Hartley Bay was similar to other First Nations' villages: the community was quite inaccessible, the population was relatively young, and health services were inconsistent.

**Participants**
After initial correspondence with Hartley Bay community members who identified children's dental health as an issue of concern, members of the Brighter Smiles "team" from UBC travelled to Hartley Bay to meet with community representatives including the elected and hereditary Band chiefs, the Band Council, village Elders, the school principal and teachers, the Health Director, and the community health representative (CHR). These initial meetings were followed up with another visit to Hartley Bay that also involved the FNIB dental therapist with responsibility for Hartley Bay, the regional FNIB Dental Director, and a provincial Ministry of Health community dental hygienist.

At both of these site visits to Hartley Bay, dental examinations were completed on a convenience sample of children. One calibrated examiner and a recorder conducted the dental exams. Results of the screening examinations are shown in Table I. In addition, a larger sample of parents of pre-kindergarten children to Grade 12 youth completed 12-item pre-tested questionnaires that explored their child's current dental health behaviours. Selected results are in Table II.

**Intervention**
The program was designed to fulfill the overall service-learning goal for pediatric trainees and, at the same time, to include an oral health promotion component. Program planning combined the wisdom of community members, especially the Elders, with results of the dental screening, evidence from the literature, and previous experience by team members, especially those from the Faculty of Dentistry who had extensive background in community-based oral health promotion.

Funding was available from the project grant for regular visits to Hartley Bay by UBC pediatrics residents accompanied by an attending specialist pediatrician. These visits, occurring about every two months,
TABLE V
Comparison of Time Units Needed to Complete Dental Treatment for Children in Hartley Bay and in “Comparison Community”: 2001 and 2004

<table>
<thead>
<tr>
<th></th>
<th>Hartley Bay 2001 (N=34)</th>
<th>Chi-square; p-value</th>
<th>Hartley Bay 2004 (N=49)</th>
<th>Chi-square; p-value</th>
<th>“Comparison community” 2001 (N=49)</th>
<th>Chi-square; p-value</th>
<th>“Comparison community” 2004 (N=71)</th>
<th>Chi-square; p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time units for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restorations*</td>
<td>137</td>
<td>20.0; p&lt;0.001</td>
<td>68</td>
<td>181</td>
<td>137</td>
<td>6.6; p&lt;0.025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extractions of primary teeth</td>
<td>35</td>
<td>6.96; p&lt;0.01</td>
<td>14</td>
<td>34</td>
<td>44</td>
<td>1.7; p&lt;0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preventive therapy†</td>
<td>288</td>
<td>12.5; p&lt;0.001</td>
<td>301</td>
<td>355</td>
<td>368</td>
<td>3.7; p&lt;0.025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All treatment</td>
<td>474</td>
<td>598</td>
<td>418</td>
<td>580</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Amalgam and composite resin “fillings” and stainless steel crowns
† Cleaning, fluoride treatment, fissure sealants, and preventive resins
‡ All examinations and treatment plans by one standardized FNHB dentist-examiner

provided ongoing high-quality pediatric care. The key elements of the Brighter Smiles community oral health program (http://www.knowledgenetwork.ca/brightersmiles/) were the following:

1. School-based daily “brush-ins” in which children, supervised by teachers or nursing station staff, brushed their teeth daily with fluoride toothpaste.
2. Weekly fluoride rinses for youth 9 years of age and older or tri-annual fluoride varnish applications for children under 9 years of age. Incentives for participation in brush-ins and fluoride programs were weekly cash draws for older children and small prizes for the younger children.
3. Dental health issues integrated into age-appropriate anticipatory guidance provided by pediatricians at health clinic visits. Examples of the oral health messages given at a specific well-child visit are in Table III.
4. Classroom presentations given by visiting residents emphasizing oral health topics, but also other issues, for example, nutrition, tobacco use, and medical careers.

Pediatric residency training programs generally include limited learning opportunities about oral health, despite the fact that dental decay is a common child health concern. In order to prepare trainees for their rotation to Hartley Bay, each resident was required to spend at least a day with a member of the B.C. Children's hospital dental staff in either the dental operating room or in the dental outpatient clinic. In addition, dental health topics are part of regularly scheduled academic half-days. Extensive resource materials are also available in the Hartley Bay clinic.

The community-based activities are managed and supervised by the community's Health Director and his staff. Expert support is provided by a community dental hygienist who visits the community twice a year to review each child's oral hygiene. The hygienist also helps to problem-solve any concerns related to the fluoride programs.

OUTCOMES

Process measures
Initial funding for Brighter Smiles was for a two-year period, which included time for project development. Brighter Smiles has since been "promoted" to program status by the Special Populations Initiative and receives ongoing funding. Table IV enumerates the pediatrics residents' visits to Hartley Bay over the first two-plus years of the project. Participation in the school brush-in and fluoride program is usually 100% of eligible children.

Indicators of success
A follow-up dental health survey is planned as part of program evaluation after Brighter Smiles has been in place for a few more years, but, in the interim, other indicators of the project's success are available. On an annual basis, the provincial FNHB dentist, using a standardized protocol, examines and "treatment plans" all on-reserve First Nations children in the province. Selected treatment needs of children before and about 16 months after Brighter Smiles was fully implemented, are compared in Table V. Treatment needs for a similarly-sized, neighbouring First Nations community over the same time period is provided for comparison (Table V). In addition, in her six visits to the community, the consultant dental hygienist has informally reported noticeable improvement in oral hygiene in the majority of children.

DISCUSSION

Since Brighter Smiles began, all pediatrics residents in the UBC program have had a rotation to Hartley Bay. The urban hospital where the residents do the majority of their training provides extensive experience in managing severely medically-compromised children, but scant experience in the primary care of "healthy" children. As a result of Brighter Smiles, pediatrics residents now receive essential experience in a primary care setting. Of even more importance is that the setting includes children with whom they normally have limited interaction, namely rural, Aboriginal children and youth. Evidence suggests that medical specialists are more likely to treat patients who are normally disadvantaged in our medical system if there has been exposure to them during their training. Ongoing project evaluation will include follow-up on the resident's practice profiles after completion of their training.

In addition, the children of Hartley Bay have had the benefit of the expertise of pediatricians-in-training accompanied by attending specialists in pediatric medicine. Together they have offered the community an exceptional level of child health care. In addition, the entire community benefits from on-site physicians to help triage medical emergencies.

A further positive outcome has been that trainee pediatricians received enhanced education about oral health, for example, the basics of examining a child's mouth. They are now aware of the physician's role in improving child oral health. Certainly, since young children more commonly see a physician than a dentist and given that there will never be enough dental professionals to treat existing dental disease, physicians can play a strategic role in resolving the public health disaster of dental caries in First Nations children.
SERVICE LEARNING IN A FIRST NATIONS COMMUNITY

Early indicators of the effect of Brighter Smiles on oral health are represented by results of the FNIBH dentist's yearly oral examinations. A positive trend is the significant improvement in the proportion of the dental therapist's planned “service time” scheduled for preventive maintenance services, rather than restorative and surgical services. Another noteworthy trend in Hartley Bay was expedited when the community identified that children's dental health was a concern. Unfortunately, such shared decision-making does not always take place.

However, despite these cautions, many of the lessons learned in Hartley Bay are applicable to other communities. Indeed, a nearby community has requested a program similar to Brighter Smiles and pediatricians have already extended their rotations to include this community.

Some caution is required before extrapolating this experience to other First Nations communities. The small population and compact nature of Hartley Bay combined with committed “key players” fostered efficient implementation of the program. These characteristics are rare in remote, First Nations communities where the population is often widely scattered over a vast geographic area. The diverse and abundant health challenges of First Nations communities in combination with over-burdened human resources may also mean that, while important, dental health is not a major priority.

For researchers to respond effectively to a community's health issues, the community must articulate their concerns and the researchers must respond appropriately. The collaboration between UBC and Hartley Bay was expedited when the community identified that children's dental health was a concern. Unfortunately, such research can be a creative means of addressing their community's health care needs.

Some caution is required before extrapolating this experience to other First Nations communities. The small population and compact nature of Hartley Bay combined with committed “key players” fostered efficient implementation of the program. These characteristics are rare in remote, First Nations communities where the population is often widely scattered over a vast geographic area. The diverse and abundant health challenges of First Nations communities in combination with over-burdened human resources may also mean that, while important, dental health is not a major priority.

For researchers to respond effectively to a community's health issues, the community must articulate their concerns and the researchers must respond appropriately. The collaboration between UBC and Hartley Bay was expedited when the community identified that children's dental health was a concern. Unfortunately, such

REFERENCES


RESUMÉ

Objectif : Le projet Brighter Smiles visait à améliorer la santé dentaire des enfants d'une communauté éloignée de Premières nations, en Colombie-Britannique, dans le contexte d'une expérience d'apprentissage des services à l'intention des médecins résidents en pédiatrie.

Lieu et participants : Le ministère provincial de la Santé disposait de fonds concurrentiels pour des mesures de collaboration entre des communautés éloignées et des professeurs en médecine. La Bande indienne de Hartley Bay (Gitga'at), une tribu de la nation tsimshian, a répondu à l'appel en déclarant que la santé dentaire des enfants était l'une de ses principales préoccupations en matière de santé. Cette communauté nordique a une population d'environ 200 personnes vivant dans une réserve et n'est accessible que par avion et par bateau.

Intervention : On a administré un premier examen dentaire à un échantillon de commodité composé d'enfants; les parents ont aussi répondu à un questionnaire sur les habitudes de santé dentaire de leurs enfants. Seulement 3% (4/13) des enfants qui ne fréquentent pas encore la maternelle et 8% (2/26) des enfants de la maternelle à la 12e année n'avaient aucune carie dentaire. Pour planifier le projet, on a fait appel à des dirigeants communautaires, des enseignants, des parents, des anges, du personnel médical, des médecins résidents en pédiatrie et des membres des facultés de médecine et de soins dentaires de l'Université de la Colombie-Britannique (UBC). Le projet comportait des séances de brossage des dents en milieu scolaire, des programmes de fluorure, des présentations en salle de classe et des visites périodiques à Hartley Bay par des médecins résidents en pédiatrie de UBC, pour offrir des services de consultation pédiatrique, y compris des conseils dentaires aux parents adaptés à l'âge de l'enfant.

Résultats : L'un des premiers indicateurs de réussite du projet a été la proportion significativement accrue des centaines de soins dentaires servis aux services d'entretien préventif plutôt qu'à la réhabilitation orale (restaurations et extractions).

Conclusions : L'objectif d'offrir aux stagiaires en pédiatrie une expérience d'apprentissage des services dans une communauté éloignée a été atteint. De plus, des indicateurs précoces montrent que la santé bucco-dentaire des enfants s'améliore.