


Community led: celebrating wellness with a smile

Marcella Ogenchuk ^a, Robert St. Pierre^b, Gerry Uswak^c, Holly Graham^a, Robert Weiler^d and Vivian R. Ramsden^d

^aCollege of Nursing, University of Saskatchewan, Saskatoon, Canada; ^bFormer La Loche Mayor, La Loche, Saskatchewan, Canada; ^cCollege of Dentistry, University of Saskatchewan, Saskatoon, Canada; ^dCollege of Medicine, University of Saskatchewan, Saskatoon, Canada

ABSTRACT

Dental caries is the most common chronic childhood disease in Canada and creates a significant burden on both human and financial costs. In Canada, the annual cost of dental day surgery for children is \$21.2 million. The objective of this study was to explore and address the strengths and barriers related to the provision of oral health services in an Indigenous community in northern Saskatchewan. This community-based participatory research project focused on developing authentic relationships with the community. This research is novel because it is community-led and from the perspective of Indigenous people. Descriptive statistics were undertaken to describe the 38 participants. Semi-structured interviews were conducted with elders, healthcare providers, teachers and parents/guardians of elementary school-aged children; and inductive, thematic analysis was undertaken with the qualitative data. The most commonly identified themes included: community resilience, the need to improve oral health literacy and skills and the mitigation of barriers to access care. The research process included co-creating tools with the community that built upon strengths, creating opportunities for change, generated solutions and transforming the health system the community accessed.

ARTICLE HISTORY

Received 28 February 2021
Revised 23 July 2021
Accepted 26 July 2021

KEYWORDS

Indigenous; paediatric; oral health

Introduction

Dental caries was not always common in Indigenous communities [1, 2]. Traditional oral healthcare methods included the use of sinew as dental floss and birch bark was used as an antibacterial to maintain good oral health [3]. When foods rich in fermentable carbohydrates became accessible, dental caries became prevalent [2], yet preventive services are often avoided by individuals with a history of traumatic experiences in the provision of oral health care [4]. Today, tooth decay is the most prevalent chronic childhood infectious disease in Canada and worldwide [5]. Saskatchewan has the third highest rate of day surgeries to treat dental caries among children aged 1–5 years, and the rates are not improving. Although early childhood caries (ECC) is preventable, advanced forms of decay frequently require surgery under general anaesthesia, placing these children at risk of complications. ECC also poses an increased risk for future decay in their permanent teeth. The annual cost of hospital care in Canada is \$21.2 million (inclusive of day surgery). Many children treated for tooth decay are treated in dentists' offices and are not included in the data, underestimating the severity of the problem. It has been suggested that children at the highest risk for the development of

caries are from a lower socioeconomic status, living in rural/remote areas and in Indigenous communities [1].

ECC is defined as the presence of one or more decayed, missing (due to caries) or filled tooth surfaces in any primary tooth in a preschool aged child [6]. ECC can have serious consequences on children's systemic and psychosocial well-being [7], and links to other health problems, such as low birth weight [8], preterm delivery [9] and iron deficiency [10]. In Canada, 57% of children aged 6–11 years old are affected by dental caries, while 24% of all children have caries in their permanent teeth [11]. Children with cavities often suffer from pain and difficulty eating, sleeping and speaking, leading to difficulties in their school performance and decreased self-confidence [12]. Oral health practices by primary caregivers are critical to minimising the transmission of the bacteria and modelling good oral health habits for children. ECC is considered a multifactorial disease caused by diet, bacteria and the impact of social determinants on health and well-being [1].

Oral health primarily falls outside of the Canada Health Act. As a non-insured health benefit, services are provided through various programmes, funding arrangements and oral healthcare providers in Indigenous communities [13] for First Nations with

status [14]. Despite available services and access to a fairly comprehensive non-insured health benefits plan, Indigenous populations have the highest rates of dental decay which are two to three times higher than non-Indigenous populations. When the initial Canadian Oral Health Strategy (COHS) (2005–2010) was developed, there was no position devoted to oral health and no recent baseline data to monitor progress or develop programmes [15]. Since then, there has been one First Nations Oral Health Survey (FNOHS) [16] completed and an Inuit Oral Health Survey [17] published. A Children’s Oral Health Initiative (COHI) was also initiated with the idea of preventing dental caries among First Nations and Inuit pre-school children, their parents and pregnant women [18]. The COHS oral health status goals were set after reviewing limited baseline data. COHI utilises over 250 community-based aides to assist oral healthcare professionals with oral health education, health promotion and health services, such as applying fluoride varnish [15].

This study explored parents’ and community members’ perceptions of the quality of oral health their children experienced; current practices in implementing health promotion, prevention and clinical treatment to improve oral health outcomes in children in an Indigenous community. This study also noted the perception of barriers for access to care included lack of health promotion, prevention and treatment (oral health services) for children and programmes needed to meaningfully address oral health within the community.

Methods

Study area, design and period

The village of La Loche is located in northwest Saskatchewan near the Clearwater River Dene Nation. It has a population of 2827, with many people fluent in both English and Dene. Documentation indicates that as early as 1778, fur trade posts existed on Lac La Loche, but highways were built as recently as 1963 [19].

This community-driven project aligned with the Tri-Council Policy Statement (TCPS 2) [20], specifically Chapter 9, and utilised participatory health research and transformative action research [21]. The research team developed authentic partnerships co-designed to address the community’s existing oral health issues

Approach (Stage 1)

Prior to undertaking the various elements of the research project, La Loche community and the

researchers co-created, submitted, and received approval for a Behavioural Application from the University of Saskatchewan’s Behavioural Research Ethics Board (REB) (17–305; 22 August 2017).

Engagement (Stage 2)

Congruent with participatory health research, community leaders, the La Loche Mayor and councillors facilitated the process for recruiting research assistants from the community [21]. Utilising purposive sampling, elders, community leaders, healthcare providers, teachers and parents/guardians of pre-school and/or school-aged children were invited to participate through Facebook, and school newsletters. The number and roles of participants invited were based on the desire to have broad participation and reach saturation and triangulation of the responses so that the community’s needs could be appropriately addressed.

Data analysis (Stages 3 & 4)

Quantitative data was analysed using SPSSv25 to describe the participants. Semi-structured interviews were conducted from December 2017 to July 2018 and subsequently transcribed. Each participant was provided an opportunity to review the written copy of the semi-structured interview and make changes to it. An inductive thematic analysis was undertaken by the researchers and research assistants in the community as a form of member checking [22]. The findings were returned to the community for interpretation and a discussion about future directions. This research project achieved theoretical sufficiency. The themes were well described and fit (clarity, consistency) within the data [22], and evolved from the semi-structured interviews.

Results

Socio-demographic characteristics

Participants were asked questions about demographics, age, income and health benefits to provide contextual information during the interview. Thirty-eight community members participated in the project. The majority of participants were female (n = 35; 92%) between 19

Table 1. Participant gender.

| Gender | Number of Participants (%) |
|--------------|----------------------------|
| Male | 3 (7.9) |
| Female | 35 (92.1) |
| Total | 38 |

Table 2. Participant age.

| Age in years | Number of Participants (%) |
|--------------|----------------------------|
| 19–29 | 8 (21.0) |
| 30–49 | 18 (47.4) |
| 50–69 | 5 (13.2) |
| 70–89 | 1 (2.6) |
| No Response | 6 (15.8) |
| Total | 38 |

Table 3. First language.

| Language | Number of Participants (%) |
|--------------|----------------------------|
| Dene | 25 (66) |
| English | 7 (18) |
| Cree | 1 (3) |
| Other | 5 (13) |
| Total | 38 |

Table 4. Employed participants.

| Employed | Number of Participants (%) |
|--------------|----------------------------|
| Yes | 22 (58) |
| No | 14 (37) |
| No Response | 2 (5) |
| Total | 38 |

Table 5. Number of home occupants in different age groups.

| Number of Homes With | Occupants (%) |
|-----------------------------|---------------|
| Children under 5 years | 17 (45) |
| Children older than 5 years | 23 (60) |
| Adult | 34 (89) |
| Older Adults/Elders | 1 (3) |
| Other | 4 (10) |

Table 6. Number of people living in the home.

| People | Number of Homes (%) |
|--------------|---------------------|
| 1–2 | 5 (13) |
| 3–4 | 14 (37) |
| 5–6 | 13 (34) |
| 7 – plus | 2 (6) |
| Total | 38 |

and 49 years of age ($n = 26$; 68%) (Tables 1 and 2). Sixty-six per cent ($n = 25$) of participants indicated Dene was their first language; 18% ($n = 7$) specified English as their first language (Table 3). Over half of the participants were employed ($n = 22$; 58%) (Table 4). Forty-five per cent ($n = 17$) of participants had children less than 5 years of age in the home, and 60% ($n = 23$) stated that the household had children greater than 5 years of age. Three per cent indicated there were only adults 55 years of age or older living in the home. Half, 50% ($n = 19$) of participants lived in homes with 4 or fewer people (Table 5); a further 34% ($n = 13$) of participants lived in homes with 5–6 people (Table 6). Almost half of the participants indicated that they accessed dental benefits through Social Assistance (21%; $n = 10$), and/or Indigenous Services Canada Non-Insured Health

Table 7. Source of dental care benefits.

| Benefit Source | Number of Participants (%) |
|-------------------|----------------------------|
| Social Assistance | 10 (26) |
| FNIHB* | 8 (21) |
| Work | 7 (18) |
| Insurance | 4 (10) |
| Other/None | 9 (24) |
| Total | 38 |

*First Nations and Inuit Health Branch.

Benefits (NHIB) (26%; $n = 10$). A further 18% ($n = 7$) identified work as their source of dental coverage; and 8% ($n = 3$) said that they did not have any dental coverage (Table 7).

Knowledge, attitudes and behaviours

Participants described healthy teeth as “white teeth, nice, no cavities, straight”. Behaviours such as “brushing twice a day, flossing, eating healthy foods, brushing daily, eating right, drinking water rather than sugar drinks, parents helping their children brush their teeth and taking them to the dentist on a regular basis” were reported to contribute to having healthy teeth. Furthermore, “when the child is healthy, they have no pain whatsoever, a pretty smile, which was that they have had proper care, with no gum disease”.

Over half of the participants agreed that “the health of teeth affect the way that the children talk, the way that they feel about themselves” and their overall health, “dental infections can spread into the body”. Participants had a good knowledge in general about what caused decay, such as “juice in bottles, using the bottles too long, too much sugar, not brushing teeth, and not going to the dentist”. Participants responded that the “children needed to brush their teeth twice a day with toothpaste; they knew oral health impacts all body systems”.

Strengths identified within the community

The infrastructure and equipment for dentists to work at the health clinic were identified as assets. The dental therapist that visits the elementary school was viewed as a strength, as were role models in the community who have taken care of their teeth.

Barriers within the community

There was no dentist in the community, and there appeared to be some confusion or lack of awareness of when a dentist was in the community. The cost to leave the community for dental care was a barrier due to the distance necessary to drive to the dentist. The price of healthy food, toothbrushes and toothpaste

were also listed as barriers to caring for children's oral health.

Opportunities for learning

The community identified that learning was necessary; specifically: the age at which and how to stop bottle feeding, how to clean infant and toddler's teeth, tooth brushing practices for those under the age of 8 years, and when children should brush their own teeth. There was a gap between actual reported behaviour (when they take their children to the dentist) and knowledge (at what age to first take child to the dentist). Participants responded that instead of taking children to the dentist by 12 months of age and for regular check-ups, they were only taken "when needed" for pain.

Community needs

The community identified a need for better access to care within the community, education about oral health at all levels, subsidised or free dental hygiene supplies, and healthier food choices. There was confusion about what services people could access based on their eligibility for benefits. They acknowledged inequities to accessing dental care based on treaty status or work benefits. For example, one participant described a situation where the dentist on reserve could only provide dental care for those with treaty status. Thus, the remaining people must travel to a neighbouring community. The participants provided several practical ideas to raise awareness and education in the community, and potential structural/policy changes that could improve and promote access (e.g. transportation, promotion of services, eligibility).

Discussion

This study revealed that the participants in La Loche understood the need for healthy teeth and that healthy teeth impacted overall health, but care-seeking was based on pain rather than prevention. Oral health literacy can be improved by measures such as targeted prevention messages, incentives, and clear communication on when and how to access services. The community members suggested creating posters with smiles and healthy teeth. They indicated that they would like to develop a children's book (ISBN # 088880662-0) – written and illustrated by the community members – which portrayed the community's strengths [23]. This book can be used as a tool to provide targeted information about successes and knowledge gaps. There remains a need for targeted, consistent education to address specific knowledge gaps in prevention, such as

alternatives to bottle feeding, when children are capable of toothbrushing, and evidence-based practices for oral assessment of toddlers and children.

This research confirmed previously identified barriers, such as access to care (prevention and clinical), which still exist for some residents, despite their knowledge of the importance of and how to take care of children's teeth [24]. This research supported the concept that access to oral health services has been based not only on the community's location and resource availability but eligibility for oral health benefits and the financial cost to those without third party dental benefits, especially for out-of-community dental travel.

Community members identified that different access routes existed for dental treatment, which was most often related to their treaty status. This blended community of status, non-status and non-Indigenous residents are neighbours with different opportunities for accessing preventative and clinical care. Ease of access to comprehensive care is dependent on dental benefit plans from work, social assistance or treaty status. Given other associated costs with accessing care – especially out of community care – access to dental benefits does not ensure they are utilised in a timely manner or at all. The remoteness of this community added unique transportation and cost challenges those closer to regional centres do not face.

Navigating the health system was another barrier for community residents. The lack of permanent dentists and communication of itinerant dental visits to community members was problematic. The Dental Therapist position is vacant; limiting prevention services to the school children and is difficult to fill because of the loss of the Canadian dental training programme [25]. The remoteness and lack of housing also contributed to a lack of permanent or itinerant dentists. Some participants had limited access to comprehensive care (type and choice) based on the type of third-party dental benefits. The lack of choice in providers can affect confidence in and shared care decision-making. When leaving the community was required, the cost to the community was not only the travel expense but the time involved for parents to leave work for themselves or to accompany children and the children's absences from school. This process was often undertaken multiple times and challenged by weather and availability of transportation.

Effective, population-based preventative measures require community engagement of key stakeholders, such as dental professionals, teachers, nurses, physicians, parents and community members, as they all have a role to play in assuring good oral health.

Collaboration and screening by non-oral health professionals have the potential to improve access to care. Earlier assessment and intervention reduce the prevalence, extent and severity of dental caries in pre-school children and the need for day surgery. Frequent reminders need to accompany access to affordable resources [6].

Knowledge translation

Community-based research and integrated knowledge translation (IKT) foster processes that co-create knowledge. The primary purpose of knowledge translation (KT) is to bridge the know-do gap: ensuring the findings of the research were usable for those using the knowledge [26]. The IKT process in this research was iterative and resulted in community-identified projects and participation in analysing and presenting a peer-reviewed poster at an International Conference (March 2019). This research was one of the first to explore the needs, beliefs and health behaviours related to oral health in an Indigenous community while directly involving Indigenous peoples in the research processes. The study identified strengths and barriers related to the availability, accessibility, accommodation, affordability and acceptability of oral healthcare services and new resources with the community [27]. The knowledge gleaned from this interdisciplinary, community-based team can build individual, community and provincial capacity and aid in creating a road map for the next steps. A community-led project such as this is essential for facilitating practice, policy and future research [28].

Conclusions

The research processes and co-creation of the community-driven responses to the findings are equally significant. This project has developed sustainable relationships and built on the community's own strengths and capacities. The findings will inform local practices, policy and practice improvements, and guide future research. Opportunities exist for the transferability of the novel processes used in the co-creation of this project to other similar communities.

Acknowledgments

We would like to acknowledge all of the participants from the community of La Loche for sharing their stories.

Limitations

Although the sample size in this project was adequate, there was only one interview with each participant due to their availability and the travel time required. This research focused on paediatric oral health and was strength-based. Parental/caregiver experiences with their own oral health care were not included.

Data availability statement

The data is available from the corresponding author on reasonable request.

Informed consent statement

Informed consent was obtained from all subjects involved in the study

Institutional review board statement

The study was conducted according to the guidelines of the Tri-Council Policy Statement (specifically Chapter 9) and approved by the University of Saskatchewan's Behavioural Research Ethics Board (17-305; 22 August 2017).

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This research was funded by Saskatchewan Research Health Foundation, Grant #3983.

ORCID

Marcella Ogenchuk  <http://orcid.org/0000-0003-3123-7409>

References

- [1] Canadian Institute Health Institute. Treatment of preventable dental cavities in preschoolers: a focus on day surgery under general anesthesia. 2013 [cited 2014 Jan 30]. Available from: http://publications.gc.ca/collections/collection_2014/icis-cihi/H118-94-2013-eng.pdf
- [2] Harford J, Spencer J, Roberts-Thomson K. Oral health. In: The health of Indigenous Australians, Thomson N editor; 2003. South Melbourne: Oxford University Press. ISBN 0-19-551220-0, 313–338.
- [3] Newlove-Heide G. Poster presentation. What works? A literature review of effective oral health programs with Indigenous populations. Saskatoon: College of Dentistry, University of Saskatchewan; 2016.
- [4] Raja S, Hoersch M, Rajagopalan C, et al. Treating patients with traumatic life experiences: providing trauma informed care. J Am Dent Assoc. 2014;145:238–245.

- [5] Government of Canada. Oral health for children. 2018 [cited 2019 Jan 10]. Available from: <https://www.canada.ca/en/public-health/topics/oral-health/caring-your-teeth-mouth/children.html#a1>
- [6] Canadian Dental Association. Report on early childhood caries. 2010 [cited 2015 Sept 10]. Available from: https://www.cda-adc.ca/en/about/position_statements/ecc/
- [7] Peterson PE. Global policy for improvement of oral health in the 21st century - implications to oral health research of World Health Assembly 2007, World Health Organization. *Community Dent Oral Epidemiol.* 2009;37:1–8.
- [8] Dasanayake AP. Poor periodontal health of the pregnant woman as a risk factor for low birth weight. *Ann Periodontol.* 1998;3:206–212.
- [9] Zachariassen RD, Dennison DK. Periodontal disease and preterm low birth weight deliveries. *J Gt Houst Dent Soc.* 1998;70:16–19.
- [10] Clarke M, Locker D, Berall G, et al. Malnourishment in a population of young children with severe early childhood caries. *Pediatr Dent.* 2006;28(3):254–259.
- [11] Health Canada. Report on the findings of the oral health component of the Canadian health measures survey 2007–2009. 2010 [cited 2015 Sept 10]. Available from: <https://www.caphd.ca/sites/default/files/CHMS-E-summ.pdf>
- [12] Jackson SL, Vann WF, Kotch JB, et al. Impact of poor oral health on children's school attendance and performance. *Am J Public Health.* ;2011: 1900–1906.
- [13] Canadian Academy of Health Sciences. Improving access to oral health care for vulnerable people living in Canada. Ottawa (ON). 2014 [cited 2014 Sept 10]. Available from: <https://cahs-acss.ca/improving-access-to-oral-health-care-for-vulnerable-people-living-in-canada/>
- [14] Government of Canada. Non-Insured health benefits: drug benefit list. 2020 Sept [cited 2021 Feb 1]. Available from: <https://www.sac-isc.gc.ca/eng/1572888328565/1572888420703>
- [15] Federal, Provincial and Territorial Dental Working Group. Reducing dental disease: a Canadian oral health framework: 2013-2018. Ottawa (ON). 2012 [cited 2019 Nov 29]. Available from: <https://www.caphd.ca/sites/default/files/FrameworkOctober%202014%20-%20FINAL%20English.pdf>
- [16] The First Nations Information Governance Centre. Report on the findings of the First Nations Oral Health Survey (FNOHS) 2009-10. Ottawa (ON): The First Nations Information Governance Centre; 2012 [cited 2020 Jan 8]. Available from: https://fnigc.ca/wp-content/uploads/2020/09/fn_oral_health_survey_national_report_2010.pdf
- [17] Health Canada. Inuit oral health survey 2008-09. 2011. Available from: [cited 2020 Jan 8]. https://www.tunngavik.com/files/2011/05/inuitoralhealthsurveyreport_2008-09.pdf
- [18] Government of Canada. Children's oral health initiative. 2016. Available from: <https://www.canada.ca/en/health-canada/corporate/about-health-canada/activities-responsibilities/strategies-initiatives/first-nations-inuit-health-strategies-initiatives.html#cohi-isbde>
- [19] Horizon Strategic Consultants. Saskatchewan's northern population changes, 2011 to 2016. 2017 [cited 2018 Jun 30]. Available from: www.horizonStrategies.ca
- [20] Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada. Tri-council policy statement: ethical conduct of research involving humans. 2018 Dec [cited 2019 Jan 8]. Available from: https://ethics.gc.ca/eng/tcps2-eptc2_2018_chapter9-chapitre9.html
- [21] Ramsden VR. Integrated primary health services model research team. Learning with the community. Evolution to transformative action research. *Can Fam Physician.* 2003 Feb;49:195–7, 200–2. PMID: 12619744; PMCID: PMC2214182.
- [22] Dey I. Grounding grounded theory: guidelines for qualitative inquiry. San Diego (CA): Academic Press; 1998.
- [23] Ogenchuk M, St. Pierre R, Cheecham C, et al. A smile. Saskatoon; SK: Publisher. ISBN. 088880662-0. 2021.
- [24] Schroth RJ, Moffatt ME. Determinants of early childhood caries (ECC) in a rural Manitoba community: a pilot study. *Pediatr Dent.* 2005;27:114–120.
- [25] Leck V, Randall G. The rise and fall of dental therapy in Canada: a policy analysis and assessment of equity of access to oral health care for Inuit and First Nations communities. *Int J Equity Health.* 2017;12:150.
- [26] Jull J, Gilles A, Graham I. Community-based participatory research and integrated knowledge translation: advancing the co-creation of knowledge. *Implement Sci.* 2017;12:150.
- [27] Pechansky R, Thomas JW. The concept of access: definitions and relationship to consumer satisfaction. *Med Care.* 1981;19:127–140.
- [28] Schroth R. The state of dental health in the north. *Int J Circumpolar Health.* 2006;65:98–100.