

Aboriginal preschool vision screening in BC – closing the health gap

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The value of early childhood screening for vision disorders is based on the recognition that 5% to 10% of preschool age children experience vision problems that, if left untreated, can result in permanent vision loss and adverse social and educational development.¹ Although common vision disorders such as amblyopia, strabismus, and refractive errors are preventable or reversible with early diagnosis and treatment, a systematic approach to identifying vision disorders in preschool age children is lacking in Canada.^{2,3} To optimize this criti-

cal period of early childhood development, the Province of British Columbia implemented a universal vision screening program in 2007 to identify and facilitate treatment for preschool and/or kindergarten age children with vision defects.⁴ Consistent with the commitments of the 2006 *Transformative Change Accord: First Nations Health Plan (TCA: FNHP)* to close the health gap between Aboriginal peoples and the rest of BC's population, additional supports were allocated to ensure all Aboriginal children on and off-reserve in BC receive vision screening.

The purpose of this short review is to identify some of the critical knowledge and knowledge gaps in Aboriginal children's eye health and vision care services to support Aboriginal vision screening in BC and ensure Aboriginal children get the best possible start in life. It begins with description of BC's Aboriginal population including demographics and health status. The impact of social determinants of Aboriginal health is then discussed with specific reference to the determinants of vision health. It concludes with a brief overview of some of the work conducted to date in Aboriginal children's vision as part of the National Collaborating Centre for Aboriginal Health's (NCCAH) vision screening initiative.^a

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A note on terminology

Aboriginal peoples are the descendants of the original inhabitants of North America. Canada's *Constitution Act* (1982) recognizes three distinct groups of Aboriginal peoples: Indian, Inuit, and Métis. The term First Nations includes both Status and non-Status Indians. Status Indians are registered by the Federal government and governed by the *Indian Act* (1876). Non-Status Indians are not registered or governed by the *Indian Act*.⁵ Inuit are a distinct population of Aboriginal peoples that reside primarily in the Canadian North and were registered under a revision to the *Indian Act* in 1924. Métis means a person of mixed First Nations and European ancestry who self-identifies as Métis and whose ancestors resided in the historic Métis Nation homeland. The Métis people are not entitled to the provisions of the *Indian Act*.⁵

Methods

A broad search of academic articles and published grey literature (i.e. government and non-governmental technical reports and papers) was conducted to identify critical knowledge and knowledge gaps related to Aboriginal eye health, vision care, and the social determinants of health. The search terms Aboriginal, First Nation, Métis, Inuit, Native, Native American, and Indigenous were used in combina-

tion with eye and vision care, preschool vision screening, visual impairment, refractive error, myopia, hyperopia, astigmatism, amblyopia, strabismus, social determinants, and determinants of health. The review included international, national, and provincial literature but was limited to English language publications from 1970 to present.

Limitations of this review include significant gaps in the coverage and quality of Aboriginal health research in Canada. With respect to coverage, the absence or inconsistency of First Nations, Inuit, and Métis identifiers in most health data systems (vital registries, primary care and hospital records, and surveillance systems) results in certain subpopulations being systematically excluded from health data collection.⁶ The multi-jurisdictional nature of Aboriginal health systems (federal, provincial/territorial, health region, Aboriginal governing authority or a combination) similarly poses a problem with data collection and analysis varying according to Aboriginal ethnicity and geography.⁶ Key data quality challenges have also been identified including the use of substandard data sources and/or the application of substandard methods in Aboriginal health data work.⁶

Aboriginal demographics for BC

British Columbia is home to the second largest Aboriginal population in Canada. According to the Aboriginal Peoples 2006 Census, there are 196,075 Aboriginal peoples in BC, which is roughly 5% of the total population of the province. First Nations constitute the vast majority of BC's Aboriginal population (129,580 or 66%), followed by Métis (59,445 or 30%), Inuit (795 or 0.4%), multiple Aboriginal identity (1655 or 0.8%), and other Aboriginal peoples not included in the other categories (4605 or 2.3%).⁷ Aboriginal peoples in BC are much younger than the BC population as a whole with approximately 28% under 14 years of age compared to 16% of the non-Aboriginal population.⁸ In 2006, there were 16,195 Aboriginal children between 0 to 4 years of age and 18,005 Aboriginal children between 5-9 years of age in BC.⁹ BC's Aboriginal population is also growing at a faster rate than the rest of the province, primarily because of its younger population and higher birth rates. Between 2001 and 2006, the Aboriginal population increased by 15% which is more than three times the rate of the non-Aboriginal population in BC.⁷ The Métis population in BC grew at a much faster rate (132%) between 1996 and 2006 compared to the First Nations population (18%) and

Inuit population (7%).¹⁰ The Aboriginal population is geographically dispersed across the province with the highest percentage residing in the Northern Health Authority (24.5%) followed by Interior Health Authority (22.9%), Vancouver Island Health Authority (20.7%), Fraser Health Authority (19.4%), and Vancouver Coastal Health Authority (12.5%) respectively.⁸ In 2006, approximately 74% of Aboriginal people in BC lived off-reserve.⁸

Health status of Aboriginal children

Aboriginal peoples in Canada bear a disproportionate burden of ill-health compared to the non-Aboriginal population with significantly higher rates of infectious and chronic diseases, disability, and premature death.¹¹⁻¹² Aboriginal children are among the most vulnerable. In the 2009 Canadian Supplement to the State of the World's Children, UNICEF reported that in almost all child health status indicators and health determinants, Aboriginal children in Canada fall well below the national averages for Canadian children.¹³ Although there are large gaps in the health information available for Aboriginal children in Canada – notably vital registration data, health care utilization data, and data specific to Métis children, Non-Status First Nations children, and Aboriginal children living in urban areas – the existing data suggests that

Aboriginal children experience higher rates of infant mortality, sudden infant death syndrome, injury, accidental death, suicide, ear infections, respiratory tract illness, dental caries, and increased exposure to environmental contaminants including tobacco smoke.^{8, 14-15} For vision impairment specifically, national data from the 2006 Aboriginal Children's Survey and the 2002/03 First Nations Regional Health Survey indicates that 11% of First Nations (off-reserve) and Métis children, between six and 14 years of age, suffer from visual impairments. Approximately 5% of Inuit children, aged six to 14 years, experience visual impairment.¹⁵

Despite these high visual impairment rates, significant knowledge gaps exist with respect to the types of vision disorders affecting Aboriginal children, their ability to access proper eye care services, and the potential impacts of vision impairments on Aboriginal children's learning and development. For example, in a 2006 scan by Health Canada on Aboriginal child health research, ninety peer-reviewed journal articles were identified over a ten year period (1996 to 2005) none of which

examined visual impairment or diseases of the eye among Aboriginal children.¹⁶ The research from this period was also not found to be reflective of Aboriginal peoples geographic distribution in Canada,^b location (on/off reserve, urban), or identity relative to their share in Canada's overall population.^c The distribution of research across age categories was similarly problematic with an emphasis on infants (0-2 years of age), but very little research on preschoolers.¹⁶

Social determinants of vision health

The social determinants of health are the “conditions in which people are born, grow, live, work, and age – conditions that together provide the freedom people need to live lives they value”.¹⁷⁻¹⁸ These conditions are shaped by the distribution of money, power, and resources at the global, national, and local levels and their relationship to health is graded: “the lower an individual's socioeconomic status, the worse their health”.¹⁹

The underlying causes of Aboriginal health disparities in Canada are rooted in the classic social determinants – food, shelter, education, employment and income – as well as a myriad of indigenous-specific determinants such as colonization, systemic racism, social exclusion, loss of language and culture, migration, disconnection from the land, inter-generational trauma, and

b Aboriginal children in Quebec were over-represented in the literature

c First Nations children have been most often studied (62%). Inuit children were over-represented in the literature, while Métis were under-represented with only one research article.

“...Social disadvantage and racial or ethnic differences have been shown to influence prevalence and risk factors for common vision conditions as well as access to and quality of vision care.”

geographical and jurisdictional barriers to accessing health services.^{12, 20} The impact of social determinants manifests differently among Canada's various Aboriginal peoples and contributes to different, undesirable health outcomes at each stage of life.²¹ Vision health is no exception. Social disadvantage and racial or ethnic differences have been shown to influence the prevalence of, and risk factors for, common vision conditions. They also impact access to, and the quality of, vision care services.

For example, in a major review on the underutilization of vision screening for amblyopia, optical anomalies, and strabismus among preschool age children in the United States, Castanes (2003) found that low-income, minority, and uninsured families are at high risk of not utilizing vision screening.²² Citing a lack of knowledge about preventive care, the unavailability of service providers, language barriers, financial costs of accessing care, and a disproportionate funding of medical care versus preventive care as key barriers to uptake, Castanes recommends greater education and awareness of the benefits of preventive services is required to empower and engage parents and guardians.²² Ganz, Xuan &

Hunter's (2006) study on the prevalence and correlates of diagnosed eye and vision conditions among children in the US also suggests that non-white children, children whose mothers have less than a high school education, and children without a usual source of care have significantly lower rates of diagnosed conditions than their counterparts. In other words, “underprivileged children may be under-diagnosed, under-treated or both placing them at risk for future problems”.²³ Similar studies in the United Kingdom suggest that while children from lower socio-economic status groups are at greater risk for vision disorders²⁴, they are less likely to see an eye-care specialist or to use screening services.²⁵ This divergence between clinical need and provision of clinical services suggests inequitable access to services for already disadvantaged populations.²⁵ Despite the large gaps in literature on this topic, it is evident that socio-economic determinants and the social gradient in health can negatively impact children's vision and create inequities in access to and quality of eye care. This is of particular importance to the successful implementation and uptake of Aboriginal-specific screening for preschool age children in BC.

Aboriginal vision screening in BC

The provision of hearing, dental and vision screening to all Aboriginal children under age six living on and off-reserve in BC is one of twenty-nine action items identified in the TCA-FNHP intended to help close the gap in the health status of Aboriginal peoples and the rest of the population.²⁶ An essential part of the larger provincial early childhood universal screening program launched in 2007, the Aboriginal children's screening initiative is supported by the First Nations Health Council's (FNHC) Maternal and Child Health program, which brings together Tripartite First Nations Health Plan^d partners in planning, service delivery, monitoring and evaluation.²⁷ Additional supports are also provided through the National Collaborating Centre for Aboriginal Health's (NCCA) vision screening initiative, which is focused on

d The Tripartite First Nations Health Plan (TFNHP) is a ten year plan (2007-2017) that was ratified in 2007 by the BC First Nations Leadership Council, the Province of BC and the Federal government. It builds on the TCA-FNHP and is intended to close the health gap for First Nations in BC. http://www.health.gov.bc.ca/library/publications/year/2007/tripartite_plan.pdf

research and knowledge translation related to Aboriginal children's vision.²⁸ The remainder of this review will focus on activities to date carried out by the NCCAH to promote education and awareness about Aboriginal children's vision, the determinants of vision health, and considerations for the successful uptake of screening services.

In 2007, the NCCAH conducted a survey of 145 BC community health representatives (CHRs) and public health nurses (PHNs) across BC to determine vision care needs of First Nations children living on reserve. Approximately 206 First Nations bands were contacted, with 145 agreeing to participate in the survey. Of these, 70 communities reported having access to vision services but only 21 received continual care. The remainder reported irregular clinics or none at all.²⁹ Cost was identified as a limiting factor to accessing health services, particularly with respect to travel costs for rural and remote community members.²⁹ Although satellite optometric offices eased the burden of travel in some instances, short clinic times and/or clinics offered only during work hours resulted in limited access.²⁹ A key recommendation to improve service uptake and sustainability of vision screening for First Nations children on-reserve included taking a holistic approach to services through greater community engagement and First Nations involvement in decision-

making processes that impact their health and well-being.

Following the needs assessment, the NCCAH conducted an environmental scan and literature review of provincial, national, and international programs, resources, and research related to preschool screening and Aboriginal eye health. The report found that with the exception of the Arctic Ophthalmology Symposium research collected in 1973, and a handful of diabetic retinopathy research in the late 1990s, very little information is available on Aboriginal vision care or eye health needs in Canada.³⁰ However, the report did identify some innovative programs and resources nationally and internationally that can serve as excellent models for improved Aboriginal eye health and vision care. Three projects funded by the Canadian National Institute for the Blind (CNIB) are worth noting for their efforts to address determinants of vision health including: a project on overcoming barriers to vision care and rehabilitation through culturally appropriate participatory action³¹; the development of culturally relevant visual acuity charts³², and a teleophthalmology pilot for diabetic patients living in rural and remote communities in BC.³³

Building on the existing information in the needs assessment and environmental scan, the NCCAH conducted a short review of preschool vision screening programs, training models, and mentoring

programs to identify best practices approaches to sustainable screening in Aboriginal communities. Many of the programs reviewed promoted a strength-based approach to available human resources in communities and/or organizations through the training of lay screeners.³⁴ Adopting a "train-the-trainer" approach for lay screeners was found to ensure greater sustainability, especially in rural, remote and isolated areas with limited access to health professionals.³⁴ The availability of user-friendly training manuals aimed at lay screeners with no ophthalmic background was also found to be advantageous.³⁴ Working in partnership with the FNHC and the Province of BC, the NCCAH incorporated a number of these recommendations into practice.

In 2008, the NCCAH developed a training manual³⁵ for lay screeners in Aboriginal communities such as community health representatives, early childhood development workers, and community nurses that is designed to complement the provincial manual for health authority staff.³⁶ To date, five train-the-trainer vision screening workshops have been completed using these manuals. The one-day training sessions led by Dr. Barry Lester, a local northern BC optometrist, provided community health representatives (CHRs), community nurses, and early childhood development workers with hands-on practice using the

screening tools including the H.O.T.V. vision chart, Welch Allyn SureSight Vision Screener, and the Randot Preschool Stereotest. A recent evaluation of two of the training sessions found that 82.4% of participants felt the training prepared them sufficiently to conduct vision screening, with approximately 91% reporting that they found the manual useful.³⁷ The NCCAH has also provided evaluation support to analyze Aboriginal preschool and kindergarten screening data and to document the tripartite process with respect to vision screening planning and implementation. These collaborative efforts ensure a more coordinated, holistic approach to screening training, implementation, and evaluation.

Conclusion

The introduction of universal early childhood screening in BC, especially the recognition of and added support for Aboriginal children's vision needs, is a positive step towards closing the health gap. The critical knowledge and knowledge gaps identified in this short review suggest that it is impossible to address health inequities, particularly "stark disparities in eye health and vision care utilization" without confronting the social determinants affecting vulnerable populations.³⁸

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