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ATOPIC DERMATITIS AND CANADIAN INDIGENOUS PEOPLES: BURDENS, BARRIERS, AND POTENTIAL FOR SOLUTIONS

BACKGROUND:

Atopic dermatitis (AD) is the most common chronic inflammatory skin disease worldwide.[1,2,3] AD begins before age five in 90% of cases[4] and is associated with the development of comorbid conditions such as infections, environmental allergies, food allergies, asthma, anxiety/depression, and abnormalities in sleep, growth, and development. While personal experience suggests that Canadian Indigenous peoples, including children and youth, are facing burdens associated with AD, formal research studies addressing the impact of AD and skin disease in general on Canadian Indigenous peoples are lacking.

Canadian Indigenous* account for approximately 5% of the Canadian population.[5] Although Canadian Indigenous vary widely in geography, culture, language, and beliefs, they face common health disparities embedded in complex historical and social contexts related to factors such as colonization, intergenerational trauma from residential schools and institutionalization, racial segregation in the form of reservations, systemic racism, and being subjected to policies such as the 'Indian Act'.[6,7,8] This article reviews the burdens and barriers of AD in Canadian Indigenous by examining the literature, experiences of health care practitioners (HCPs), and media reports followed by proposing potential solutions to address such disparities.

BURDENS AND BARRIERS OF AD IN CANADIAN INDIGENOUS PEOPLES:

Cross-sectional and population-based Canadian studies demonstrate that AD is common among Canadian Indigenous children, but little is known about its prevalence in adults. According to the 2012 Regional Health Survey Ontario Final Report on Adults, Youth and Children Living in First Nations communities[9], the atopic triad (asthma, allergies and AD) were the top three reported conditions by children (age 0-11) and their caregivers in this population (**Table 1**). Asthma affected 15%, allergies affected 13%, and 'dermatitis/atopic eczema' affected 10% of those surveyed. Among Canadian Indigenous youth aged 12-18, the atopic triad was also among the most common conditions reported. In the same survey, skin disease data on adults was not available, although asthma and allergies were similarly identified as the most common chronic conditions (allergies affecting 23%, and asthma affecting 11%).

The British Columbia First Nations regional survey made similar findings[10], with the three most common health conditions in children being allergies (17%), asthma (12%), and 'dermatitis' (8%). Amongst youth, allergies (16%), and asthma (13%) were the top two most commonly reported conditions (AD data was not reported). In adults, there was no information on skin disease, although asthma was observed at higher than national average rates.

The 2018 national report of the compiled First Nations Regional Health Surveys[11] confirmed the high prevalence of the atopic triad among Canadian Indigenous children and youth: AD/eczema and asthma, respectively receiving treatment 69% and 64% of the time, were the top two chronic health conditions for which the highest percentage of First Nations children and youth reported receiving treatment (**Figure 2**) and for allergies, 38% of the

Chronic Health Condition	Boys (%)	Girls (%)	Total (%)
Asthma (n=753)	17.7	12.3	15.1
Allergies (n=749)	12.3	13.3	12.8
Dermatitis, atopic eczema (n=757)	10.1	10.9*	10.4
Chronic ear infections or ear problems (n=741)	7.7*	6.3	7
Speech/language difficulties (n=746)	8.3*	4.2*	6.3
Learning disability (n=744)	N/A	4.3*	4.2*
ADD/ADHD (n= 747)	3.8*	N/A	2.6*
Heart Condition (n=749)	1.6*	N/A	1.7*
Anxiety/Depression	N/A	N/A	1.0*

Table 1: First Nations Information Governance Centre/FNIGC (2012). First Nations Regional Health Survey (RHS) Phase 2 (2008/10) Ontario Region Final Report.

** High sampling variability; use value with caution*

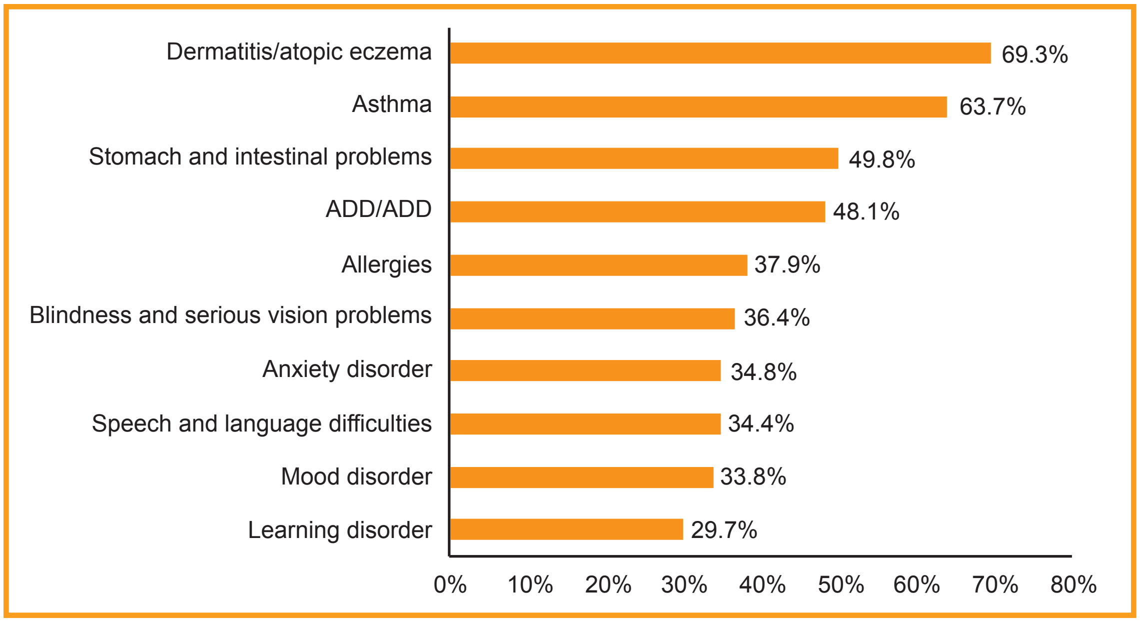

Figure 2: (FNIGC, 2018 'National Report of the First Nations Regional Health Survey Phase 3', Volume I, Figure 3.6).

time. These findings demonstrate the high burden and critical importance of these allergic diseases to Canadian Indigenous Peoples since patients and caregivers are seeking care despite the system-wide barriers and inequities. Barriers to care reported by all surveys included not only issues surrounding health care access, but also included elements related to social determinants of health such as transportation, cost, on-reserve housing conditions, water safety, and community infrastructure and implementation barriers. The limitations of these surveys include self-reported findings, sampling variability, and lack of understanding of the association between co-morbidities, outcomes and prognosis related to AD. Further research is needed in order to fully appreciate the scope of this problem.

The true prevalence of AD in Canadian Indigenous peoples may be under-estimated for a variety of reasons, including poor health care and specialist access, and due to under-representation in research engagement. A population-based survey of Indigenous children (n=182) conducted in 2014 in Labrador estimated the prevalence of AD to be 16.5%, with approximately two-thirds of cases being reported as moderate-to-severe.[12] In the north, recent cross-sectional surveys in Nunavut conducted within the last 5 years[13,14] demonstrated an overall higher prevalence of AD (range 8.6% to 25%) in both Inuit and mixed-ethnicity children (one parent Inuit), although these surveys were limited by small sample sizes. Additional efforts across multiple levels are required to better engage and empower the Canadian Indigenous community in research with the goal of optimizing health outcomes.

With regards to direct clinical experience, the first author (RA) has been conducting remote and northern outreach clinics around Saskatchewan in the form of in-person and virtual care/teledermatology for several years. She has observed a high and concerning burden of poorly controlled, functionally debilitating AD[15,16], particularly in the Indigenous pediatric population, which is often exacerbated by skin infections (eg. impetigo, MRSA [methicillin-resistant Staphylococcus aureus]). No systematic approach to the documentation of this observation exists, however, which addresses the direct clinical experience of HCPs in Indigenous skin health.

Perhaps most concerning are the media reports, mainly out of remote and northern Indigenous communities in eastern Canada, demonstrating potential for normalization of chronically infected and infested pediatric AD.[17-25] Many of these reports directly reference eczema/AD, impetigo, and scabies as poorly managed. As those with AD are at elevated risk for skin infections due to an impaired skin barrier and antimicrobial immune response, the challenges experienced by communities such as crowded housing on reserves, and lack of access to primary and specialist care may aggravate these issues and cause them to persist.

POTENTIAL FOR SOLUTIONS:

Although fully addressing the complex and deeply ingrained health disparities faced by Canadian Indigenous peoples is beyond the scope of this article, there are steps that HCPs can take to help alleviate this burden and contribute to both short- and long-term solutions. From a non-clinical standpoint, clinicians should seek out educational initiatives aimed at improving cultural sensitivity, such as online courses offered by the University of Alberta[26] and University of Saskatchewan.[27] From a clinical standpoint, the management of common skin conditions encountered among Canadian Indigenous peoples, such as AD and impetigo, should be highlighted in medical curriculums, especially for nurses and primary care physicians who are at the frontlines of care in remote and northern communities. Access to specialists is generally limited due to long wait times and the lack of geographic dispersion among specialists in remote communities. In order to truly enhance Indigenous Health, a tailored approach to address the unique disparities that Indigenous Peoples face is needed. Other practical tips and calls to action include:

- ✓ Keeping AD skin care as simple as possible to assist patients and caregivers, such as using pictorial-based handouts (such as those offered by the Eczema Society).[28]
- ✓ Prescribing adequate-sized topical therapy (e.g. 454 gram tubes) rather than small quantities (e.g. 15 or 30 gram tubes) including repeat prescriptions to reduce trips to pharmacy, dispensing fees, and provide enough therapy to optimally manage disease.
- ✓ Becoming familiar with NIHB coverage for AD. Examples include that NIHB covers bland moisturizers through prescription for those with AD, and that biologic therapy with dupilumab for moderate-to-severe AD does not require trials of methotrexate or cyclosporine.
- ✓ Development and delivery of nursing-led therapeutic educational models for AD management is needed in both online and conventional frameworks.[29,30]
- ✓ Advocating for phototherapy services for AD and other skin disorders in high population catchment areas, such as northern Ontario, may alleviate burdens of immunosuppression from alternative agents such as methotrexate and cyclosporine.
- ✓ Advocating for telemedicine initiatives, which may improve health from a cost, quality, and access standpoint.[31,32]
- ✓ Development of a national, interdisciplinary focus group to tackle burdens of AD and communicable infectious disease in northern and remote Canadian Indigenous communities.[33,34]
- ✓ Indigenous community engagement and empowerment, as well as Indigenous authorship is strongly needed in inter- and transdisciplinary research initiatives. The AAAAI/ACAAI approach has prioritized this in developing AD guidelines[42]
- ✓ National summits to increase awareness, HCP engagement, and direct perspective on interdisciplinary action plans.

CONCLUSIONS:

Although more information is needed, the current literature, multiple lines of evidence (i.e., clinical experience of HCPs, media reporting, and limited scientific reports) demonstrate the depth of impact of AD in Canadian Indigenous populations. The literature suggests that the atopic triad, starting with AD, represents the most common set of chronic health conditions seen in Indigenous children and youth. Especially when moderate-to-severe, those suffering from AD have been documented to face physical, mental, emotional, psycho-social and financial burdens due to their disease.[35,36] Thus, strategies must be implemented to tackle AD in these populations. Given the recent calls to action by the Truth and Reconciliation report,[37] the United Nations Declaration on the Rights of Indigenous peoples,[38] concerns for mass gravesites on residential school grounds, and the Pope's acknowledgement of cultural genocide, urgent calls to action must be heeded and acted upon. More research and information on AD is needed in Canadian Indigenous adults, and transdisciplinary research and integrated knowledge transfer approaches involving a wide variety of stakeholders, including Indigenous community members, with the ultimate goal of tangible health outcomes are needed.[39-41] A systematic scoping review of North American Indigenous skin and atopic disease led by the authors of this review, RA and DC, is currently underway, which may further shed light on regional and national issues in this field.

Footnotes: *The Canadian Constitution of 1982 defines "Aboriginal" peoples of Canada to encompass First Nations, Metis, and Inuit. Terms such as the use of "Indian" and "Eskimo" are considered outdated.

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