VOLUME 5

Sioux Lookout Research Compilation

2018-2020

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Sioux Lookout Local Education Group

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Meno Ya Win
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Sioux Lookout Research Compilation #5 2018-2020

Sioux Lookout researchers continue to advance community-based research. The Sioux Lookout – NOSM Local Education Group comprised primarily of NOSM faculty members, collaborates with the Sioux Lookout Meno Ya Win Health Centre, the Sioux Lookout First Nations Health Authority and the First Nations communities of Northwest Ontario.

This is the 5th Research Compilation of Sioux Lookout-based cross-cultural research. Each volume encompasses several years of peer reviewed literature reproduced with permission of the authors. We thank the clinicians, fellow researchers, administrators, study participants and the SLMHC Research Review and Ethics Committee for contributing to the knowledge of the medical and social realities in our region. Over the past decade, research has become an integral part of the fabric of our healthcare provision and we are pleased to continue the tradition.

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Rural and Generalist Medicine

A holistic approach to suicide research and prevention in Northwestern Ontario. Gordon J, Matheson A. Northern Public Affairs 2018;5(3):23-28.

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Rural and Generalist Medicine

An holistic approach to promoting resilience and bimaadiziwin among First Nations youth in communities in Northwestern Ontario

Janet Gordon & Kimberly Matheson

Indigenous youth experience many of the same developmental stressors as non-Indigenous youth. Yet, the disproportionate number of Indigenous youth attempting and completing suicide suggests that the behavioural profile associated with suicide differs (Bolton, 2014; MacNeil, 2008), and the prevalence of conditions that place Indigenous youth at risk is greater. Intergenerational trauma, cultural discontinuity, community struggles (poverty, insufficient and inadequate housing, low education and employment, lateral violence), and familial factors emanating from historical and ongoing trauma (poor parenting, substance use, mental health challenges) all contribute to Indigenous youth deaths by suicide (Kirmayer et al., 2007).

Given the range of contributing factors, it should not be surprising that any single approach to suicide prevention is unlikely to have substantial impacts. Knowing where to begin and how to proceed is difficult when so little is known about effective prevention of youth suicide in general, and Indigenous youth suicide more specifically (Harlow et al., 2014; Kutcher et al., 2017). What is known is that sustained and real change requires holistic and culturally appropriate interventions (Bennett et al., 2015; White & Mushquash, 2016). Such a claim is not novel, and is consistent with the conclusions of numerous reports, including the 1995 Royal Commission on Aboriginal Peoples "Choosing Life" report, and the 2017 report of the Standing Committee on Indigenous and Northern Affairs titled "Breaking Point." The Indigenous Youth Futures Partnership was created with the understanding that if interventions are only mobilized when communities are in crisis, suicide prevention will continue to be an upstream battle. A more effective approach would be to reduce the multitude of risk factors for suicide by providing young people with the strength, self-knowledge, and hopes that promote resilience and empower them on the pathway to bimaadiziwin (a healthy way of life).

Framework guiding the Indigenous Youth Futures Partnership

After several years of partnership-building across disciplines, universities, and sectors working with children and youth in northwestern Ontario, in 2016 the Indigenous Youth Futures Partnership (IYFP) was launched. The IYFP brings together tools and approaches rooted in local Indigenous knowledge and Western science to work together with First Nations communities in the Sioux Lookout First Nations Health Authority (SLFNHA) zone in northwestern Ontario to articulate each community's vision for the future. This vision will guide the co-development, implementation and evaluation of multiple, interdependent pathways to foster youth resilience and create the conditions for youth to thrive.

The need for an interconnected approach to suicide prevention reflects the IYFP's early discussions with First Nations youth who pointed to the importance of "being balanced physically, emotionally, mentally, and spiritually," "having and being a good role model and being a leader", "community gatherings" and especially "family." Elders further underscored the need for youth to understand the history of First Nations peoples that has led to their current circumstances. Such an understanding would help youth to appreciate that their difficulties are not about their own shortcomings, or those of their family or community. By recognizing the pervasive effects of colonizing practices and policies, there is a basis for moving forward in the healing process.

As depicted in Figure 1, the IYFP framework takes a systems-based approach to suicide prevention that places youth at the centre, and recognizes the influences of the local community, the institutions that affect how communities operate, and in the values, norms, and social relationships that are at the core of community life. This framework is consistent with theoretical perspectives that argue that resilience operates within the 'ecosystem' in which youth reside (Burns, 2014). In line with this, the IYFP approach focuses on activities that target four elements; the order in which they are consid-

Original Article
Article original

Characterizing high-frequency emergency department users in a rural northwestern Ontario hospital: a 5-year analysis of volume, frequency and acuity of visits

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This article has been peer reviewed.

Introduction: High-frequency emergency department users contribute substantially to urban emergency department workloads. The scope of this issue in rural emergency care provision is largely unknown.

Methods: We retrospectively analyzed emergency department visits at the Sioux Lookout Meno Ya Win Health Centre and associated primary care data from 2010 to 2014 for high-frequency (≥ 6 annual visits) and non–high-frequency(< 6 annual visits) emergency department users.

Results: High-frequency use of the emergency department was stable over the study period. High-frequency users constituted 7.2% of the emergency department patient population and accounted for 31.3% of the emergency department workload and 24.3% of hospital admissions. High-frequency users had similar clinical presentations as non–high-frequency users but required fewer admissions per emergency department visit (5.3% vs. 7.6%, $p < 0.001$). High-frequency users had more low-acuity presentations and concurrently accessed primary care services twice as often as non–high-frequency users. Females outnumbered males across all age categories in both user groups.

Conclusion: High-frequency emergency department use is an important issue for rural hospitals. High use of this rural emergency department was not associated with limited use of primary care services. Aside from accepting that "they will always be with us," more research, particularly qualitative, is needed to understand why some patients frequently visit a rural emergency department.

Introduction : Les grands utilisateurs des services d'urgence contribuent substantiellement au fardeau de ces unités en milieu urbain. On connaît mal l'ampleur de cet enjeu lorsqu'il est question des services d'urgence en milieu rural.

Méthodes : Nous avons analysé rétrospectivement les consultations aux services d'urgence du Centre de santé Meno Ya Win de Sioux Lookout et les données associées concernant les soins primaires de 2010 à 2014 chez les grands utilisateurs (≥ 6 consultations/année) et les autres utilisateurs (< 6 consultations/année) des services d'urgence.

Résultats : Chez les grands utilisateurs, le recours aux services d'urgence est demeuré stable pendant la période de l'étude. Ils ont représenté 7,2 % de l'achalandage de ces services, 31,3 % du fardeau de travail et 24,3 % des hospitalisations. Les grands utilisateurs présentaient des tableaux cliniques similaires à ceux des autres utilisateurs, mais ont nécessité moins d'hospitalisations par consultation (5,3 % c. 7,6 %, $p < 0,001$). Les grands utilisateurs présentaient plus de tableaux peu aigus et accédaient concomitamment aux services de soins primaires 2 fois plus souvent que les autres utilisateurs. Les femmes étaient plus nombreuses que les hommes, toutes catégories d'âge confondues, chez les 2 types d'utilisateurs.

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Research

Prevalence of chronic kidney disease and cardiovascular comorbidities in adults in First Nations communities in northwest Ontario: a retrospective observational study

Len Kelly MD MClinSci, Cai-lei Matsumoto MPH, Yoko Schreiber MD MSc, Janet Gordon PND, Hannah Willms, Christopher Olivier MD, Sharen Madden MD MSc, Josh Hopko, Sheldon W. Tobe MD MScCH

Abstract

Background: The prevalence of adult chronic kidney disease and cardiovascular comorbidities in Canadian Indigenous communities is largely unknown. We conducted a study to document the prevalence of chronic kidney disease and concurrent diabetes mellitus, hypertension and dyslipidemia in a First Nations population in northwest Ontario.

Methods: In this observational study, we used retrospective data collected from regional electronic medical records of 16 170 adults (age ≥ 18 yr) from 26 First Nations communities in northwest Ontario from May 2014 to May 2017. Demographic and laboratory data included age, gender, prescribed medications, estimated glomerular filtration rate, urine albumin:creatinine ratio, low-density lipoprotein cholesterol (LDL-C) level and glycated hemoglobin (HbA_{1c}) concentration. We identified patients with diabetes by an HbA_{1c} concentration of 6.5% or higher, or the use of a diabetic medication, those with dyslipidemia by an elevated LDL-C level (≥ 2.0 mmol/L) or use of lipid-lowering medication, and those with hypertension by use of antihypertensive medication.

Results: Of the 16 170 adults residing in the communities, 5224 unique patients (32.3%) had renal testing (albumin:creatinine ratio and/or estimated glomerular filtration rate). The age-adjusted prevalence of chronic kidney disease was 14.5%, and the prevalence of stage 3–5 chronic kidney disease (estimated glomerular filtration rate < 60 mL/min) was 7.0%. Most patients with chronic kidney disease (1487 [80.0%]) had at least 1 cardiovascular comorbidity. A total of 1332 patients (71.6%) had diabetes, 1313 (70.6%) had dyslipidemia, and 1098 (59.1%) had hypertension; all 3 comorbidities were present in 716 patients (38.5%).

Interpretation: We document a high prevalence of advanced chronic kidney disease in this First Nations population, 7.0%, double the rate in the general population. High rates of cardiovascular comorbidities were also common in these patients with chronic kidney disease, which places them at increased risk for cardiovascular disease.

Planning chronic disease management services for a population requires knowledge of the existing comorbid diseases to assist in both primary and secondary prevention. For rural and remote populations spread over a vast region who must come to a central health hub for services such as dialysis initiation, it is essential. Information on the prevalence of chronic kidney disease, a precursor to end-stage renal disease, and its risk factors for progression is a necessity given the impact on quality of life and costs involved.[1–3] In response to rising rates of end-stage renal disease and chronic kidney disease, First Nations community chiefs in northwest Ontario requested a better understanding of the burden of chronic kidney disease and related comorbidities.

Indigenous Canadians experience a high burden of chronic kidney disease.[4–6] A 2001 screening study in Canadian First Nations communities suggested an estimate in adults of up to 30%.[6] First Nations populations in Canada are more likely than non-Indigenous populations to progress to end-stage renal disease, and their rate of death related to chronic kidney disease is 77% higher than that in the non-Indigenous population.[7–10] The prevalence of diabetes mellitus, a major risk for progressive chronic kidney disease, is higher in Indigenous population than in non-Indigenous populations, and it occurs at a younger age and is associated with increased mortality, cardiovascular disease and lower limb amputation.[11,12] Uncontrolled hypertension is also major risk factor for progression to end-stage renal disease and, together with diabetes, dyslipidemia and chronic

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Trans individuals' experiences in primary care

Justin Bell MD CCFP Eva Purkey MD MPH CCFP FCFP

Abstract

Objective To explore past experiences and describe the expectations of members of the trans community regarding the delivery of primary care by their family physicians.

Design Qualitative phenomenologic approach.

Setting Kingston, Ont, which has a population of approximately 123 000.

Participants A convenience sample of 11 individuals older than 18 years of age who self-identified as trans was recruited through community agencies and family medicine clinics.

Methods Semistructured interviews were recorded and transcribed verbatim, and thematic analysis of transcripts was carried out by 2 independent researchers using NVivo.

Main findings Eleven interviews took place between September and November 2016; 4 individuals identified as trans men, 6 as trans women, and 1 as gender nonconforming. Themes identified included perceived physician knowledge of trans identities, patient self-advocacy, discrimination, positive spaces, and expectations of ideal care. The expected role of the family physician for trans patients includes hormone assessment and prescription and referrals for gender-affirming surgeries.

Conclusion The trans community has several physical and mental health needs that are not being met by the current health care system. Family physicians need to be empowered to provide services such as hormone initiation and gender-affirming surgery referrals. Although other specialists might have a role for some patients, most trans people expect care to be delivered by family physicians whenever possible.

Editor's key points

- The provision of health care for trans individuals has been historically relegated to non–family physician specialist clinics in tertiary care centres. Recent provincial health policy changes have shifted considerable responsibility for care of these patients to family physicians. This population has well-documented mental and physical health disparities when compared with cisgender Canadians, and family physicians need to be prepared to provide for their specific health needs.
- Despite their negative experiences, this study suggests that the trans community has achievable expectations of family physicians. Owing to family physicians' accessibility and capacity to provide all-inclusive care, participants reported a preference for having their family physicians provide hormone replacement therapy and surgical referrals instead of other specialists. Providing safe spaces for trans patients can increase the likelihood that individuals will access care appropriately.
- All family physicians must be involved in providing these services so that trans care can be accessible to everyone across the country. In regions where trans care is still delivered largely through other specialists, increasing the role of family physicians will improve access. Participants waited years in some cases to see other specialists, and suicide attempts are highest when care has been sought but transition has not yet started.

Intermittent fasting and weight loss

Systematic review

Stephanie Welton MSc Robert Minty MD CCFP FCFP
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Abstract

Objective To examine the evidence for intermittent fasting (IF), an alternative to calorie-restricted diets, in treating obesity, an important health concern in Canada with few effective office-based treatment strategies.

Data sources A MEDLINE and EMBASE search from January 1, 2000, to July 1, 2019, yielded 1200 results using the key words *fasting, time restricted feeding, meal skipping, alternate day fasting, intermittent fasting,* and *reduced meal frequency*.

Study selection Forty-one articles describing 27 trials addressed weight loss in overweight and obese patients: 18 small randomized controlled trials (level I evidence) and 9 trials comparing weight after IF to baseline weight with no control group (level II evidence). Studies were often of short duration (2 to 26 weeks) with low enrolment (10 to 244 participants); 2 were of 1-year duration. Protocols varied, with only 5 studies including patients with type 2 diabetes.

Synthesis All 27 IF trials found weight loss of 0.8% to 13.0% of baseline weight with no serious adverse events. Twelve studies comparing IF to calorie restriction found equivalent results. The 5 studies that included patients with type 2 diabetes documented improved glycemic control.

Conclusion Intermittent fasting shows promise for the treatment of obesity. To date, the studies have been small and of short duration. Longer-term research is needed to understand the sustainable role IF can play in weight loss.

Editor's key points

- In all 27 trials examined, intermittent fasting (IF) resulted in weight loss, ranging from 0.8% to 13.0% of baseline body weight. Weight loss occurred regardless of changes in overall caloric intake. In the studies of 2 to 12 weeks' duration, body mass index decreased, on average, by 4.3% to a median of 33.2 kg/m^2. Symptoms such as hunger remained stable or decreased, and no adverse events were reported.
- While IF is a moderately successful strategy for weight loss, it shows promise for improving glycemic control, although it does pose a potential risk of hypoglycemia.
- The heterogeneity in the current evidence limits comparison of IF to other weight-loss strategies. Intermittent fasting shows promise as a primary care intervention for obesity, but little is known about long-term sustainability and health effects. Longer-duration studies are needed to understand how IF might contribute to effective weight-loss strategies.

ORIGINAL ARTICLE

Diabetes prevalence and demographics in 25 First Nations communities in northwest Ontario (2014–2017)

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Abstract

Introduction: First Nations communities are known to have high rates of diabetes. The rural First Nations communities in northwest (NW) Ontario are particularly affected. Regional studies in 1985 and 1994 found a high prevalence of diabetes. More recently, they are estimated to have the highest prevalence in Ontario at 19%, double the provincial norm. The purpose of this study is to examine the epidemiology and prevalence of diabetes in the total population and cardiovascular comorbidities in the adult population of 25 First Nations communities in NW Ontario.

Methods: This retrospective diabetes prevalence study used primary care electronic medical record data for a 3-year period, 1 August 2014–31 July 2017. Diabetes prevalence was calculated for both the total and the adult (18+) populations and comorbid hypertension and dyslipidaemia were identified in adults.

Results: The age-adjusted diabetes prevalence for the total population was 15.1% versus a Canadian prevalence of 8.8%. The age-adjusted adult prevalence was 14.1%, double Canada's average of 7.1%. The average age of adults with diabetes was 52 years (±14.9); 57% were female. Comorbid hypertension (58%) and dyslipidaemia (73%) were common. Metformin was the most commonly used medication (58%), followed by insulin/analogues (23%) and sulphonylureas (13%).

Conclusion: The diabetes prevalence in the First Nations population of NW Ontario is double Canada's norm. Addressing it will require addressing relevant social determinants of health, including poverty and food security.

Keywords: Diabetes, First Nations, prevalence

Résumé

Introduction : Les communautés des Premières nations sont reconnues pour leur taux élevé de diabète, particulièrement les communautés rurales des Premières nations du Nord-Ouest de l'Ontario. Des études régionales réalisées en 1985 et 1994 ont révélé une forte prévalence de diabète. Plus récemment, on a estimé que la prévalence dans ces communautés s'élevait à 19 %, la plus forte en Ontario et le double de la norme provinciale. Cette étude visait à examiner l'épidémiologie et la prévalence du diabète auprès de la population totale et les comorbidités

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Research

Epidemiologic features of medical emergencies in remote First Nations in northern Ontario: a cross-sectional descriptive study using air ambulance transport data

David VanderBurgh MD, David W. Savage PhD, Sacha Dubois MPH, Natalie Binguis LLB, Sadie Maxwell, Natalie Bocking MD MIPH, Terri Farrell MBChB, Homer Tien MD MSc, Stephen D. Ritchie PhD, Aaron Orkin MD

Abstract

Background: For about 25 000 Ontarians living in remote northern First Nations communities, seeing a doctor in an emergency department requires flying in an airplane or helicopter. This study describes the demographic and epidemiologic characteristics of patients transported from these communities to access hospital-based emergency medical care.

Methods: In this cross-sectional descriptive study, we examined primary medical data on patient transportation from Ornge, the provincial medical air ambulance service provider, for 26 remote Nishnawbe Aski Nation communities in northern Ontario from 2012 to 2016. We described these transports using univariate descriptive statistics.

Results: Over the 5-year study period, 10 538 patients (mean 2107.6 per year) were transported by Ornge from the 26 communities. Transport incidence ranged from 9.2 to 9.5 per 100 on-reserve population per year. Women aged 65 years or more had the highest transport incidence (25.9 per 100). Girls aged 5–9 years had the lowest mean incidence (2.1 per 100). Gastrointestinal issues accounted for 13.3% of transfers. Neurologic issues, respiratory issues and trauma each accounted for about 11% of transfers, and cardiac issues for 9.6%. Patients with obstetric issues accounted for 7.6% of transfers per year, and toxicologic emergencies for 7.5%.

Interpretation: This study provides the epidemiologic foundation to improve emergency care and emergency transport from remote First Nation communities in Ontario.

Almost all residents of Ontario, Canada live within 30 minutes of an emergency department.[1] However, for about 25 000 Ontarians living in remote communities, accessing a doctor in an emergency department requires flying in a plane or helicopter.[1] Patients in these northern communities access medical care through a local nursing station, with intermittent in-community physician coverage. Patients with high-acuity conditions are transported from remote communities to hospital by Ornge, the provincial medical air ambulance service provider.[2,3] Even under ideal conditions, these transfers take several hours. Air transports from these communities can face delays due to weather, visibility, mechanical issues and personnel issues. More than half of the associated remote airports do not have key visual aids that pilots use to land aircraft during periods of reduced visibility, which makes medical transports dependent on weather conditions.[4]

First Nations populations living in remote communities are known to face challenging social determinants of health: isolated geography, insufficient housing, unemployment, and the cultural impact of colonialism and residential schools.[5] Access to potable water is an issue in many communities, with 188 boil water advisories in First Nations in the Sioux Lookout area between 2007 and 2016.[6] These populations face trauma at rates 2.5–8 times greater than the Canadian average.[7–10] People living in these communities face elevated rates of chronic disease, which manifest as critical health emergencies including mental health, infectious disease, diabetic and cardiovascular emergencies.[11–14]

The characteristics of patients requiring air medical transport in this region have not been well described, with only a handful of published papers describing medical emergencies in these remote communities over the last 35 years.[2,6,7,15,16] We aimed to describe who is transported from 26 remote Nishnawbe Aski Nation communities in northern Ontario to access hospital-based emergency medical care and to describe the primary clinical reason for their transport as stated in the

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Addiction Medicine

Opioid use in pregnancy and parenting: An Indigenous-based, collaborative framework for Northwestern Ontario

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ABSTRACT

Opioid use affects up to 30% of pregnancies in Northwestern Ontario. Health care providers in Northwestern Ontario have varying comfort levels providing care to substance-involved pregnant women. Furthermore, health care practitioners, social service agencies and community groups in Northwestern Ontario often work in isolation with little multidisciplinary communication and collaboration. This article describes two workshops that brought together health and social service providers, community organizations, as well as academic institutions and professional organizations involved in the care of substance-involved pregnant and parenting women. The initial workshop presented best practices and local experience in the management of opioid dependence in pregnancy while the second workshop asked participants to apply a local Indigenous worldview to the implementation of clinical, research and program priorities that were identified in the first workshop. Consensus statements developed by workshop participants identified improved transitions in care, facilitated access to buprenorphine treatment, stable funding models for addiction programs and a focus on Indigenous-led programming. Participants identified a critical need for a national strategy to address the effects of opioid use in pregnancy from a culturally safe, trauma-informed perspective that takes into account the health and well-being of the woman, her infant, her family and her community.

KEY WORDS: Opiate dependence; pregnancy; Indigenous health services; rural population

La traduction du résumé se trouve à la fin de l'article.

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Communities in Northwestern Ontario began experiencing an epidemic of opioid misuse over 10 years ago. The Truth and Reconciliation Commission acknowledged that substance use is a symptom of the ongoing suffering experienced by Canada's Indigenous peoples through colonial institutions and policies such as the residential school system.[1] In 2009, the Nishnawbe Aski Nation Chiefs-in-Assembly declared a state of emergency for prescription drug abuse in all of its 49 communities[2] as rates of opioid use were estimated to reach 50%–80% of the population.[3] Given the prevalence of opioid use in rural and remote First Nations communities, it is not surprising that a significant proportion of reproductive-aged women become pregnant while using opioids.

Northwestern Ontario has over 2500 deliveries each year with 40% of the deliveries occurring in the region and 60% in Thunder Bay.[4] The prevalence of opioid use in pregnancy varies throughout the region. At Lake of the Woods Hospital in Kenora, a centre with 240 births in 2013,[4] opioid exposure is present in 3% of pregnancies.[5] At Sioux Lookout Meno Ya Win Health Centre, which had approximately 450 births in 2014,[4] the prevalence of opioid use in pregnancy has risen from 8% in 2009 to 18% in 2011, and to 28% in 2014.[6–9] A similar pattern was seen at the Thunder Bay Regional Health Sciences Centre, which has approximately 1500 births annually.[4,10]

Recent data on the pattern of use has shown that just under half of opioid-using pregnant women are now daily users of opioids and the most common opioid remains long-acting oxycodone.[8] The route of administration has also shifted from oral and intranasal use (snorting) early in the epidemic to injection drug use in up to one third of opioid-using pregnant women by 2013.[8] The individual and public health implications associated with a shift towards injection drug use are considerable.

Health care providers in Northwestern Ontario have varying comfort levels providing addiction care to substance-involved pregnant women based on their level of clinical experience, their understanding of the social determinants of health with respect to Indigenous women, and the amount of institutional support that is

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Original Article
Article original

Maternal opioid use disorder and neonatal abstinence syndrome in northwest Ontario: a 7-year retrospective analysis

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Introduction: Opioid use in pregnancy is increasing globally. In northwest Ontario, rates of neonatal abstinence syndrome (NAS) are alarmingly high. We sought to document the increasing rates of opioid exposure during pregnancy and associated cases of NAS over a 7-year period in northwest Ontario.

Methods: We conducted a retrospective chart review at the Sioux Lookout Meno Ya Win Health Centre catchment area (population 29 000) maternity program in northwest Ontario of mother–infant dyads of live births from Jan. 1, 2009, to Dec. 31, 2015. The Integrated Pregnancy Program provides maternal, neonatal and addiction care for obstetrical patients at the health centre. We collected data on prenatal opioid exposure due to illicit and opioid agonist therapy (OAT) from patient/prescription histories and urine toxicology reports. Rates of NAS (diagnosed as a Finnegan score > 7) were recorded retrospectively from neonatal hospital charts.

Results: There were 2743 live births during the study period. Opioid exposure occurred in 672 pregnancies (335 OAT, 337 illicit). The incidence of prenatal opioid exposure increased significantly between 2009 and 2012 (11.1% to 28.5%, $p < 0.001$) but remained relatively constant at around 30% thereafter. Despite this, absolute rates of NAS remained relatively stable, with an average of 22.2 cases per 1000 live births over the study period. In comparison, the North West Local Health Integration Network (LHIN) experienced an average of 52.8 cases of NAS per 1000 live births in 2009–2012. The incidence of NAS in our centre decreased significantly over the study period (17.6% of opioid-exposed pregnancies in 2009 v. 4.0% in 2015, $p = 0.001$). There was a gradual transition toward a preponderance of OAT- versus illicit-exposed pregnancies, increasing from 0% in 2009 to 76.9% in 2015 ($p < 0.001$).

Conclusion: Despite our continually increasing rates of opioid exposure in pregnancy, rates of NAS decreased annually and were substantially lower than those of our regional LHIN. In contrast to 2009, most opioid exposure in our region is now iatrogenic as a result of OAT. These improvements may be attributable in part to the rural community-based prenatal and addictions services developed in our catchment area.

Introduction : La consommation d'opioïdes pendant la grossesse est à la hausse dans le monde entier. Dans le nord-ouest de l'Ontario, le taux de syndrome de sevrage néonatal est alarmant. Nous avons tenté de documenter les taux croissants d'exposition aux opioïdes pendant la grossesse et les cas associés de syndrome de sevrage néonatal sur une période de sept ans dans le nord-ouest de l'Ontario.

Méthodes : Nous avons mené une étude rétrospective des dossiers des patientes du programme obstétrical de la région desservie par le Centre de santé Meno Ya Win de Sioux Lookout (population de 29 000), dans le nord-ouest de l'Ontario, et des naissances vivantes de la dyade mère–nourrisson pour la période du 1er janvier 2009 au 31 décembre 2015. Des soins maternels, néonataux et de traitement de la toxicomanie sont offerts aux patientes en obstétrique du Centre de santé dans le cadre d'un programme de soins intégrés pendant la grossesse. Nous avons obtenu des données sur

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TO THE EDITOR:

Opioid Agonist Therapy: Only One Waypoint on the Mental Health Journey

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Addiction treatment in Northwest Ontario First Nations communities is only one waypoint on the mental health journey.

Recent research on community-based opioid agonist therapy (OAT) offers us the opportunity to reflect on the impact of addiction and current strategies to ameliorate its impact.[1–5] Opioid use for recreational purposes has been on the increase for the last 10 to 15 years.[6] The impact on First Nations communities is disproportionate. Marginalized groups worldwide bear the brunt of addictions.[7] Current rates of use in some First Nations communities in NW Ontario are as high as 40% in the 20 to 50 years of age cohort.[2] The recent introduction of community-based OAT programming pose some relevant questions.[1] These community-based OAT services have developed quite differently than traditional addiction programming and the contrasts are worth noting.

In NW Ontario, regional First Nations leaders proclaimed an epidemic of opioid use in 2009.[8] Harm reduction needs became compelling and practitioners and communities turned to buprenorphine/naloxone for OAT. These remote community-based programs are as varied as the communities they serve but have some interesting features.[1,2] High retention rates have been recorded (over 80% at 6 months).[1] This speaks to the community support and acceptance these programs enjoy and the absence of stigma. The devastating economic burden of opioid use place, on already economically disadvantaged families, been lessened as OAT programs have begun to displace the illicit drug trade.[2]

The availability of OAT and the efforts to develop healing and rehabilitation programs have harnessed new capacities in community members. Out of necessity and in absence of a developed structure through which the OAT programs could be placed, innovative approaches based on community input have developed. These programs have not been imposed on the communities, but rather there is a sense of ownership and shared purpose. OAT participants live at home, without the need to travel to distant urban centers, where the social isolation is typical of addicts in our larger centers. Aftercare efforts integrate land-based programs, focusing on traditional cultural practices. This tacitly acknowledges the importance of the spiritual dimension of mental health and acknowledges the need for healing from the various traumas to which participants have been exposed. This notion is central to rehabilitation efforts.

We do not yet know how sustainable these efforts in NW Ontario's remote First Nations communities will be. There is concern that this grassroots origin and current success need to be built on, so that efforts to contain addiction can achieve outcomes that are meaningful for individuals and communities. Currently these OAT programs challenge the communities' already limited health care resources. High retention rates in OAT programs are laudable but speak to the next challenge: rehabilitation and eventual sobriety. The development of OAT programs has been, largely, a stand-alone response to a problem in a population with significant mental health issues. OAT has not been placed in an overall strategy to improve mental health.

Without a comprehensive and organized mental health approach, OAT can become a cul de sac where drug supply (albeit a safe one) is the major outcome. This may serve to normalize and medicalize opioid addiction. This is not what is intended, particularly by those who have labored to make OAT available in these communities.

A public health-type approach to mental health, in tandem with clinical services should be considered. Consider the mortality and morbidity resulting from an infectious disease on a similar scale to those that reflect mental health issues in Canada's Indigenous communities.

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REVIEW ARTICLE

Nonpharmacological management of neonatal abstinence syndrome: a review of the literature

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ABSTRACT

Background: Infants with neonatal abstinence syndrome (NAS) experience withdrawal that occurs as a result of termination of placental opioid supply following delivery. Common symptoms include restlessness, tremors, agitation and gastrointestinal disturbances. Severe NAS is often treated using opioids and/or sedatives. Although commonly employed effectively in neonatal care, there is a lack of published information regarding nonpharmacological management of the NAS infant.

Objective: The purpose of this review was to summarize the current literature on nonpharmacological management of NAS.

Methods: A literature search of Medline and EMBASE was performed for articles published between 2000 and June 2107.

Results: Nonpharmacological management encompasses "environmental control", "feeding methods", "social integration", "soothing techniques" and "therapeutic modalities". Several interventions, including: breastfeeding, swaddling, rooming-in, environmental control and skin to skin contact have proven to be effective in managing NAS and should be incorporated into standard of care for this population (Level I–III Evidence). These interventions can be effective when offered in combination with pharmacological therapy, or as stand-alone therapy for less severe cases of NAS (Finnegan score <8).

Conclusions: Given the increasing body of evidence on its efficacy and ease of implementation, nonpharmacological treatment should universally be incorporated into standard of care for NAS.

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KEYWORDS
Neonatal abstinence syndrome; nonpharmacological; opioid-related disorders; therapeutics

Introduction

Neonatal abstinence syndrome (NAS) is a withdrawal condition that can develop in infants exposed to opioids *in-utero* upon the sudden discontinuation of placental opioid supply at birth. NAS can occur following exposure to a variety of prescription and illicit natural and synthetic opioids, including: methadone, buprenorphine, heroin, oxycodone, codeine and morphine. A diagnosis of NAS is made based on the presence of a cluster of neurological, gastrointestinal and cardiorespiratory symptoms following *in-utero* opioid exposure, including hypertonicity, excessive, high-pitched crying, loose stools, disturbed feeding and sleep, tremors and convulsions [1].

NAS severity can be assessed using multiple methods, however, the Finnegan and modified Finnegan scores are the most common, used in 65–95.5% of neonatal units [2,3]. The Finnegan score assesses central nervous system, metabolic, vasomotor, respiratory and gastrointestinal symptoms, using the overall score to determine treatment, with most centers initiating pharmacological treatment following three consecutive scores ≥ 8 [4]. A diagnosis of NAS does not require the presence of all the above symptoms, potentially resulting in neonates with identical NAS scores presenting with different symptoms. Infants may, therefore, respond to treatment differently and require specifically tailored supportive care strategies [5,6]. The variability in NAS presentation makes researching nonpharmacological management difficult and requires practitioners to rely on clinical experience and a certain amount of trial and error to determine the most appropriate course of treatment for each case. Symptom onset depends largely on the opioid's metabolic half-life. Synthetic and semisynthetic opioids, such as methadone and buprenorphine, have longer half-lives and typically result in a later onset of symptoms compared to natural opioids with shorter

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Push and Pull: Migration Patterns and Links to Harm Reduction Services Among People Who Use Drugs

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ABSTRACT

Objectives: The role of migration among people who use drugs (PWUD) remains a complex topic that is often shaped by risk but also has the potential for protective health outcomes. This study examines migration trends and the effect of migration on the use of social support services for PWUD in Ottawa-Gatineau region.

Methods: Respondent-driven sampling was used to recruit participants residing in Ottawa-Gatineau who were ≥18 years and used drugs in the preceding 6 months. Migration was defined as a permanent change in location after ≥3 months. Push factors (reasons for leaving previous residence) and pull factors that brought them to Ottawa were explored. Bivariable and multivariable logistic regressions were conducted using odds ratio (OR), adjusted odds ratio (AOR), and 95% confidence interval (CI), respectively, to investigate the effect of migration on shelter use and accessing harm reduction services.

Results: Of 398, 358 (89.95%) migrated in their lifetime and 71 (17.83%) within the last 12 months. Our sample was 79.40% male and 22.86% identified as First Nations, Inuit, or Métis. Migratory push factors included getting away from drugs or harmful friends and pull factors included returning home for family. Recent migrants had higher odds of living in a shelter (AOR: 2.51, 95% CI: 1.37–4.61) and lower odds (AOR: 0.40, 95% CI: 0.19–0.82) of accessing harm reduction services.

Conclusion: PWUD are a highly mobile group and despite being motivated to migrate to reconnect with family or social networks, a high prevalence of shelter use and low uptake of harm reduction services exists.

Keywords: migration, illicit drug use, harm reduction, social support, homelessness

Objectifs: Le rôle de la migration chez les personnes qui consomment des drogues (PWUD) demeure un sujet complexe qui est souvent façonné par le risque, mais qui a aussi un potentiel de protection pour la santé. Cette étude examine les tendances migratoires et l'effet de la migration sur l'utilisation des services de soutien social pour les PWUD dans la région d'Ottawa-Gatineau.

Méthodes: L'échantillonnage dirigé par les répondants a été utilisé pour recruter des participants résidant à Ottawa-Gatineau âgés de 18 ans ou plus et ayant consommé de la drogue au cours des six mois précédents. La migration a été définie comme un changement permanent d'emplacement après ≥3 mois. Les facteurs d'incitation (raisons de quitter la résidence antérieure) et les facteurs d'attraction qui les ont amenés à Ottawa ont été explorés. Des régressions logistiques bi-variables et multi-variées ont été menées en utilisant les rapports de

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YS, TR, and MT designed the study. YS performed data collection and analysis as well as wrote the manuscript. YS and KM conducted the data analyses. ZM assisted in design of the survey tool. DML, WB, LL, and SW undertook data collection. All contributed to and have approved the final manuscript.

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Editor's key points

- The effect of illicit or prescribed opioid use on child development is unclear. Maintenance with opioid agonist therapy is commonly instituted in pregnancy to stabilize drug intake and encourage a healthier pregnancy. While neonatal abstinence syndrome is well documented, opioid effects beyond the newborn period are unknown and might affect the child's and family's primary care needs. This systematic review considers the evidence on cognitive and behavioural development in children older than age 2 following in utero opioid exposure.
- The effect of in utero opioid exposure on subsequent pediatric development is unclear and the evidence inconsistent. Socioenvironmental factors might have more influence than opioid exposure does. Following the systematic review of the evidence, the authors note the importance of monitoring of childhood cognitive, motor, visual, language, and behavioural development. Family physicians should be aware of early intervention pediatric services, as well as allied health professional services, available to these at-risk children.

Effects of opioid use in pregnancy on pediatric development and behaviour in children older than age 2

Systematic review

Stephanie Welton MSc Brittany Blakelock RN
Sharen Madden MD MSc FCFP Len Kelly MD MClinSci FCFP FRRM

Abstract

Objective To summarize information on the effects of opioid use in pregnancy on subsequent pediatric development and behaviour.

Data sources Searches were performed in EMBASE, MEDLINE, and PsycINFO for peer-reviewed, English articles, including a manual search of their references, that were published between January 1, 2000, and May 1, 2018.

Study selection Of the 543 articles reviewed, 19 relevant articles that focused on developmental effects of opioid exposure in utero were identified. Most of the studies provided level II evidence. One level I meta-analysis and 1 level III expert committee report were included.

Synthesis The literature was divided between documenting some level of impairment or normalization of early development deficits over time. Often no opioid effect was found once researchers controlled for socioenvironmental factors. The degree to which environmental factors, opioid exposure, or both affect pediatric development remains to be determined.

Conclusion The effect of maternal opioid use on pediatric development is unclear and the evidence is inconsistent. However, opioid exposure in pregnancy does define these children as a population at risk. They might experience developmental delays compared with their peers, yet remain within population norms in cognition, fine-motor skills, hand-eye coordination, executive function, and attention and impulsivity levels.

Maternal Health

Caesarean Sections and Vaginal Birth After Caesarean Section Rates in a First Nations Community-Based Obstetrical Program in Northwest Ontario

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Abstract

Objective: To examine rates of Caesarean section (CS) and vaginal birth after CS (VBAC) and the patient profile in a community-based obstetrical practice.

Methods: Retrospective data from 2012-2017 for the Sioux Lookout Meno Ya Win Health Centre (SLMHC) were compared to data from the 30 hospitals providing the same level of services (Maternity 1b: maternity care by family physicians/midwives with CS and VBAC capacity) and Ontario. SLMHC VBAC patients were then compared to the general SLMC obstetrical population. Data included maternal age, parity, comorbidities, CS, VBAC, neonatal birth weight, and Apgar scores.

Results: The SLMHC obstetrical population differed from comparable obstetrical programs, with significantly higher rates of alcohol, tobacco, and opioid use and a higher prevalence of diabetes. CS rates were significantly lower (25% vs. 28%), and women delivering at SLMHC chose a trial of labour after CS almost twice as often (46% vs. 27%), resulting in a significantly higher VBAC rate (31% vs. 16%). Patients in the VBAC population differED from the general SLMHC obstetrical population, being older (7 years) and of greater parity. The neonates of VBAC patients had equivalent Apgar scores but lower rates of macrosomia and lower birth weights, although the average VBAC birth weight at 3346 g was equivalent to the provincial average.

Conclusion: The SLMHC obstetrical program has lower CS and higher VBAC rates than expected, despite prevalent risk factors typically associated with CS. Our study demonstrates that VBAC can be safely performed in well-screened and monitored patients in a rural setting with emergency CS capacity.

Key Words: Caesarean section, VBAC, First Nations

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Competing interests: The authors declare that they have no competing interests.

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Résumé

Objectif : Examiner les taux de césarienne et d'accouchement vaginal après césarienne (AVAC) ainsi que le profil des patientes dans le cadre d'une pratique obstétricale communautaire.

Méthodologie : Les auteurs ont comparé les données rétrospectives du Sioux Lookout Meno Ya Win Health Centre (SLMHC) de 2012-2017 aux données tirées de 30 hôpitaux qui offrent le même niveau de services (niveau 1b : soins de maternité prodigués par des médecins de famille et sages-femmes, dans un établissement où il est possible de réaliser des AVAC et césariennes) en Ontario. Les patientes ayant eu un AVAC au SLMHC ont ensuite été comparées à la population obstétricale générale du même établissement. Les données comprenaient l'âge maternel, la parité, les comorbidités, la césarienne, l'AVAC, le poids à la naissance et l'indice d'Apgar.

Résultats : La population obstétricale du SLMHC différait des populations de programmes obstétricaux comparables; elle présentait des taux considérablement plus élevés de tabagisme et de consommation d'alcool et d'opioïdes, ainsi qu'une prévalence accrue de diabète et un taux de césarienne significativement inférieur (25 % c. 28 %). Les femmes ayant accouché au SLMHC ont choisi presque deux fois plus souvent de se soumettre à une épreuve de travail après la césarienne que les femmes des autres populations (46 % c. 27 %), ce qui a donné lieu à un taux d'AVAC considérablement supérieur (31 % c. 16 %). Les patientes de la population ayant eu un AVAC étaient plus âgées de 7 ans en moyenne et avaient donné naissance à un plus grand nombre d'enfants que les femmes de la population obstétricale générale du SLMHC. Les nouveau-nés des patientes ayant subi un AVAC avaient un indice d'Apgar égal à celui des autres populations, mais présentaient un taux inférieur de

Original Article

Demographics, prevalence and outcomes of diabetes in pregnancy in NW Ontario

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Abstract

Introduction: Diabetes in pregnancy confers increased risk. This study examines the prevalence and birth outcomes of diabetes in pregnancy at the Sioux Lookout Meno Ya Win Health Centre (SLMHC) and other small Ontario hospitals.

Methods: This was a retrospective study of maternal profile: age, parity, comorbidities, mode of delivery, neonatal birth weight, APGARS and complications. Data were compared to other Ontario hospitals offering an equivalent level of obstetrical services.

Results: Type 2 diabetes mellitus in pregnancy is far more prevalent in mothers who deliver at SLMHC (relative risk [RR]: 20.9, 95% confidence interval [CI]: 16.0–27.2); the rates of gestational diabetes (GDM) are double (RR: 2.0, 95% CI: 1.7–2.3). SLMHC mothers with diabetes were on average 5 years younger and of greater parity with increased substance use. Neonates largely had equivalent outcomes except for increased macrosomia, neonatal hypoglycaemia and hyperbilirubinaemia in GDM pregnancies.

Conclusion: Patients with diabetes in pregnancy at SLMHC differ substantially from mothers delivering at Ontario hospitals with a comparable level of service. Programming and resources must meet the service needs of these patients.

Keywords: Diabetes, First Nations, pregnancy

Résumé

Introduction: Le diabète durant la grossesse élève le risque. Cette étude s'est penchée sur la prévalence des issues liées à l'accouchement causées par le diabète durant la grossesse au centre de santé SLMHC (Sioux Lookout Meno Ya Win Health Centre) et dans d'autres petits hôpitaux ontariens.

Méthodologie: Il s'agissait d'une étude rétrospective du profil de la mère : âge, parité, comorbidités, méthode d'accouchement, poids du bébé à la naissance, score APGAR et complications. Les données ont été comparées à celles d'autres hôpitaux ontariens qui offrent un niveau équivalent de services obstétriques.

Résultats: Le diabète de type 2 durant la grossesse est beaucoup plus répandu chez les femmes qui accouchent au SLMHC (risque relatif [RR] : 20,9; intervalle de confiance [CI] à 95 % : 16,0–27,2); le taux de diabète gestationnel est deux fois plus

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Early Gestational Diabetes Mellitus Screening With Glycated Hemoglobin: A Systematic Review

R. Kattini

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Abstract

Objective: This review sought to examine the association of HbA_{1c} levels <6.5% in early pregnancy with the subsequent development of gestational diabetes mellitus (GDM) and adverse pregnancy outcomes.

Methods: A search of Medline and EMBASE was conducted for the period of January 1, 2000 to July 9, 2019 and the terms: "*gestational diabetes* or *pregnancy diabetes mellitus*" and "*glycosylated hemoglobin* or *glycated hemoglobin A*" and "*pregnancy trimester*, *first*, or *first-trimester pregnancy*," "*screening* or *prenatal screening*," "*prenatal diagnosis* or *early diagnosis* or *prediction*," "*retrospective studies* or *prospective studies*." Quality of evidence was assessed using the Newcastle-Ottawa scale. Inclusion criteria were: measurement of HbA_{1c} <20 weeks gestation, the absence of pre-gestational diabetes mellitus, and analysis of HbA_{1c} levels below 6.5%. The primary outcome evaluated was the development of GDM. Secondary outcomes were adverse pregnancy outcomes, including large-for-gestational-age birth weight, macrosomia, preterm birth, neonatal and perinatal death, congenital anomaly, preeclampsia, shoulder dystocia, and cesarean section.

Results: We screened 121 relevant abstracts. Thirty-two studies qualified for a full review, of which 11 met the eligibility criteria. All studies were assessed as high quality and found an increased risk of GDM with HbA_{1c} levels >5.7. Levels >6.0 identified all patients who developed GDM. Adverse pregnancy outcomes were associated with elevated HbA_{1c} levels in 4 of 6 studies and included preeclampsia, induced labour, shoulder dystocia, cesarean section, large-for-gestational-age birth weight, macrosomia, congenital anomalies, and perinatal death. Two studies found no association with adverse events.

Conclusion: HbA_{1c} levels between 5.7% and 6.4% in early pregnancy consistently identified patients who went on to develop GMD. The evidence that particular levels are associated with adverse outcomes is less robust.

Key Words: glycated hemoglobin A; diabetes, gestational; systematic review

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Résumé

Objectif : Cette analyse visait à examiner la corrélation entre les taux d'$HbA1_c$ inférieurs à 6,5 % au début de la grossesse et le développement subséquent du diabète sucré gestationnel (DSG) ainsi que les issues de grossesse défavorables.

Méthodologie : Une recherche dans les bases de données Medline et Embase a été effectuée pour la période du 1er janvier 2000 au 2 juin 2019 avec les termes suivants : *gestational diabetes* ou *pregnancy diabetes mellitus* et *glycosylated hemoglobin* ou *glycated hemoglobin A* et *pregnancy trimester*, *first*, ou *first-trimester pregnancy*, *screening* ou *prenatal screening*, *prenatal diagnosis* ou *early diagnosis* ou *prediction*, *retrospective studies* ou *prospective studies*. La qualité des données a été évaluée au moyen de l'échelle Newcastle-Ottawa. Les critères d'inclusion étaient la mesure du taux d'$HbA1_c$ à moins de 20 semaines de grossesse, l'absence de diabète sucré préexistant et l'analyse des taux d'$HbA1_c$ inférieurs à 6,5 %. Le critère de jugement principal évalué était l'apparition du DSG. Les critères de jugement secondaires comprenaient les issues de grossesse défavorables, notamment un poids élevé à la naissance pour l'âge gestationnel, la macrosomie, la naissance avant terme, la mort néonatale et périnatale, les anomalies congénitales, la pré-éclampsie, la dystocie de l'épaule et la césarienne.

Résultats : Nous avons analysé 121 résumés pertinents. Trente-deux études remplissaient les conditions pour un examen approfondi, dont 11 répondaient aux critères d'admissibilité. Toutes les études évaluées étaient de grande qualité et révélaient un risque accru de DSG en présence de taux d'$HbA1_c$ supérieurs à 5,7. Toutes les patientes ayant développé un DSG présentaient des taux d'$HbA1_c$ supérieurs à 6,0. Les issues de grossesse défavorables étaient liées à des taux élevés d'$HbA1_c$ dans 4 de 6 études et comprenaient la pré-éclampsie, le déclenchement artificiel du travail, la dystocie de l'épaule, la césarienne, un poids élevé à la naissance pour l'âge gestationnel, la macrosomie, des anomalies congénitales et la mort périnatale. Deux études n'ont révélé aucune corrélation avec des issues défavorables.

Conclusion : Des taux d'$HbA1_c$ se situant entre 5,7 % et 6,4 % au début de la grossesse étaient constamment liés au développement ultérieur du DSG chez les patientes. Les données démontrant une corrélation entre certains niveaux d'HbA1c et des issues défavorables sont moins solides. The search terms were developed

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Original Research

Outcomes of Pregnancies Affected by Gestational Diabetes and Type 2 Diabetes in a Rural First Nations Obstetrical Program in Northwest Ontario

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Key Messages

- This is the first study of diabetes prevalence and birth outcomes in this First Nations population in northwest Ontario.
- Pre-existing type 2 diabetes and gestational diabetes mellitus is associated with higher prepregnancy weight, age and parity and hypertension.
- Adverse outcomes include higher rates of caesarean sections and neonatal macrosomia, hypoglycemia and hyperbilirubinemia.

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ABSTRACT

Objectives: In this work, we describe diabetes prevalence and birth outcomes in a primarily First Nations obstetrical population in northwest Ontario.
Methods: This retrospective, observational study of maternal and neonatal characteristics and birth outcomes was performed at the Sioux Lookout Meno Ya Win Health Centre between April 1, 2012 and March 31, 2017.
Results: The prevalence of pre-existing type 2 diabetes mellitus was 3.7% and gestational diabetes mellitus was 7.9%. Mothers with diabetes, compared to those without diabetes, were, on average, 5 years older and were of greater parity. Average prepregnancy weight was higher, with an increased incidence of hypertension, inductions and caesarean sections. Neonates had increased incidence of macrosomia, hypoglycemia and hyperbilirubinemia. All maternal cohorts had high rates of alcohol, tobacco and illicit opioid use.
Conclusions: We have identified a high prevalence of diabetes in this First Nations obstetrical population, with associated adverse maternal and neonatal outcomes.

Mots clés:
diabète
Premières Nations
grossesse

RÉSUMÉ

Objectifs : Dans le présent ouvrage, nous décrivons la prévalence du diabète et les issues à la naissance dans une population en obstétrique, composée principalement de femmes des Premières Nations du nord-ouest de l'Ontario.

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ORIGINAL ARTICLE

Screening for gestational diabetes in pregnancy in Northwestern Ontario

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Abstract

Introduction: We estimate the screening and prevalence of gestational diabetes mellitus (GDM) in a primarily first nations obstetrical population in Northwestern Ontario.

Methods: The study is an 8-year retrospective analysis of all gestational glucose challenge and tolerance tests performed at the Sioux Lookout Meno Ya Win Health Centre (SLMHC) laboratory from 1 January, 2010 to 31 December, 2017. Test, gestational timing and completion rate of screening were recorded, and GDM prevalence was calculated on the tested population. Screening completion rates were recorded for the subset of women who delivered at SLMHC from 2014 to 2017.

Results: The average annual GDM prevalence was 12%, double the Ontario rate. Over the 8-year period, 513 patients were diagnosed with GDM among the 4298 patients screened. Patients were screened with the 2-step (90%) or the 1-step (10%) protocol. Screening occurred <20 weeks in 3%; 54% occurred in <28 weeks and 40% >28 weeks. Seventy percent of the tests were from remote nursing stations. The screening completion rate for women delivering at SLMHC in 2017 was 80.8%.

Conclusion: The prevalence of GDM in Northwestern Ontario is twice the provincial rate. Most screening used the 2-step protocol; early screening was underused. Improvements in screening programming are underway and future research may match surveillance rates and results to GDM outcomes.

Keywords: Gestational diabetes mellitus, screening, pregnancy

Résumé

Introduction: Nous estimons le dépistage et la prévalence du diabète gestationnel au sein d'une population obstétrique composée principalement de femmes des Premières Nations du Nord-Ouest de l'Ontario.

Méthodologie: Il s'agissait d'une analyse rétrospective de 8 ans de toutes les épreuves d'hyperglycémie gestationnelle provoquée et de tous les tests de tolérance au glucose effectués au laboratoire *Sioux Lookout Meno Ya Win Health Centre* (SLMHC) entre le 1er janvier 2010 et le 31 décembre 2017. Le nombre de tests, le moment de la grossesse et le taux d'achèvement des tests de dépistage ont été consignés, et la prévalence du diabète gestationnel a été calculée dans la population testée. Le taux d'achèvement des tests de dépistage du sous-groupe de femmes ayant accouché au SLMHC entre 2014 et 2017 a aussi été consigné.

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Infectious Diseases

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BMC Public Health

RESEARCH ARTICLE Open Access

A systematic review of BCG vaccination policies among high-risk groups in low TB-burden countries: implications for vaccination strategy in Canadian indigenous communities

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Abstract

Background: Bacille Calmette-Guérin (BCG) vaccination against tuberculosis (TB) is widespread in high-TB-burden countries, however, BCG vaccination policies in low-burden countries vary. Considering the uncertainties surrounding BCG efficacy and the lower likelihood of TB exposure in low-incidence countries, most have discontinued mass vaccination, choosing instead a targeted vaccination strategy among high-risk groups. Given the increased risk of TB infection in Canadian Indigenous communities compared to the general Canadian population, these communities are a pertinent example of high-incidence groups in an otherwise low-burden country, warranting particular consideration regarding BCG vaccination strategy. This systematic review aims to synthesise and critically appraise the literature on BCG vaccination strategies in high-risk groups in low-incidence settings to provide policy considerations relevant to the Canadian Indigenous context.

Methods: A literature search of the Medline and Embase databases was conducted, returning studies pertaining to BCG vaccine efficacy, TB incidence under specific vaccination policies, BCG-associated adverse events, and vaccination policy guidelines in low-burden countries. Study screening was tracked using the Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia), and data pertaining to the above points of interest were extracted.

Results: The final review included 49 studies, spanning 15 countries. Although almost all of these countries had implemented a form of mass or routine vaccination previously, 11 have since moved to targeted vaccination of selected risk groups, in most cases due to the low risk of infection among the general population and thus the high number of vaccinations needed to prevent one case in the context of low-incidence settings. Regarding identifying risk groups for targeted screening, community-based (rather than individual risk-factor-based) vaccination has been found to be beneficial in high-incidence communities within low-incidence countries, suggesting this approach may be beneficial in the Canadian Indigenous setting.

(Continued on next page)

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BMC Public Health

RESEARCH ARTICLE Open Access

Recommendations for the screening of paediatric latent tuberculosis infection in indigenous communities: a systematic review of screening strategies among high-risk groups in low-incidence countries

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Abstract

Background: Tuberculosis (TB) continues to be a global public health concern. Due to the presence of multiple risk factors such as poor housing conditions and food insecurity in Canadian Indigenous communities, this population is at particularly high risk of TB infection. Given the challenges of screening for latent TB infection (LTBI) in remote communities, a synthesis of the existing literature regarding current screening strategies among high-risk groups in low-incidence countries is warranted, in order to provide an evidence base for the optimization of paediatric LTBI screening practices in the Canadian Indigenous context.

Methods: A literature search of the Embase and Medline databases was conducted, and studies pertaining the evaluation of screening strategies or screening tools for LTBI in paediatric high-risk groups in low-incidence countries were included. Studies focusing on LTBI screening in Indigenous communities were also included, regardless of whether they focused on a paediatric population. Their results were summarized and discussed in the context of their relevance to screening strategies suitable to the Canadian Indigenous setting. Grey literature sources such as government reports or policy briefs were also consulted.

Results: The initial literature search returned 327 studies, with 266 being excluded after abstract screening, and 36 studies being included in the final review (original research studies: $n = 25$, review papers or policy recommendations: $n = 11$). In the examined studies, case identification and cost-effectiveness of universal screening were low in low-incidence countries. Therefore, studies generally recommended targeted screening of high-risk groups in low-incidence countries, however, there remains a lack of consensus regarding cut-offs for the incidence-based screening of high-risk communities, as well as regarding the utility and prioritization of individual risk-factor-based screening of high-risk groups. The utility of the TST compared to IGRAs for LTBI detection in the pediatric population also remains contested.

Conclusions: Relevant strategies for targeted screening in the Canadian Indigenous context include community-level incidence-based screening (screening based on geographic location within high-incidence communities), as well as individual risk-factor-based screening, taking into account pertinent risk factors in Indigenous settings, such as poor housing conditions, malnutrition, contact with an active case, or the presence of relevant co-morbidities, such as renal disease.

Keywords: Latent tuberculosis infection, Indigenous communities, Targeted screening

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BMC Infectious Diseases

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Antibiotic use among twelve Canadian First Nations communities: a retrospective chart review of skin and soft tissue infections

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Abstract

Background: Previous publications indicated an emerging issue with community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA), particularly skin and soft tissue infections (SSTIs), in Indigenous communities in Canada. The objectives of this analysis were to explore the prevalence of SSTIs due to CA-MRSA and patterns of antimicrobial use in the community setting.

Methods: A retrospective chart review was conducted as part of an environmental scan to assess antibiotic prescriptions in 12 First Nations communities across five provinces in Canada including Alberta, Saskatchewan, Manitoba, Ontario, and Québec. Charts were randomly selected from nursing stations and patients who had accessed care in the previous 12 months and were ≥ 18 years were included in the review. Data was collected from September to December, 2013 on antibiotic prescriptions, including SSTIs, clinical symptoms, diagnostic information including presence of CA-MRSA infection, and treatment.

Results: A total of 372 charts were reviewed, 60 from Alberta, 70 from Saskatchewan, 120 from Manitoba, 100 from Ontario, and 22 from Québec. Among 372 patients, 224 (60.2%) patients had at least one antibiotic prescription in the previous 12 months and 569 prescriptions were written in total. The prevalence of SSTIs was estimated at 36.8% (137 cases of SSTIs in 372 charts reviewed). In 137 cases of SSTIs, 34 (24.8%) were purulent infections, and 55 (40.2%) were due to CA-MRSA.

Conclusions: This study has identified a high prevalence of antibiotic use and SSTIs due to CA-MRSA in remote and isolated Indigenous communities across Canada. This population is currently hard to reach and under-represented in standard surveillance system and randomized retrospective chart reviews can offer complimentary methodology for monitoring disease burden, treatment and prevention.

Keywords: First nations, Community-acquired MRSA, Rural health, Skin and soft tissue infection, Antimicrobial use

Background

The health of First Nations populations is a priority for the Canadian government, and for First Nations themselves [1]. Disproportionately high rates of communicable and non-communicable diseases have been documented within Canadian First Nations communities [2–6]. The disease burden is exacerbated by environmental determinants of health (e.g. food insecurity, water safety, congested and unstable housing, unemployment), individual determinants of health (e.g. smoking, alcohol use disorder, drug use, diabetes), social determinants of health including a history of social and psychological trauma of colonialism [7, 8], and limited or discriminatory access to health care resources [5, 9, 10].

In Canada, the Federal Action Plan on Antimicrobial Resistance (AMR) and Use was launched to monitor AMR, determine the full magnitude of the problem, and to evaluate the appropriate use of antibiotics [11]. The incidence of Methicillin-Resistant *Staphylococcus aureus* (MRSA) has been rising, with disproportionate rates of community-associated (CA) MRSA documented among

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Notes

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