Perspectives:
Improving First Nations, Inuit and Metis Health

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Maternal, Reproductive, and Newborn Health

Poor reproductive outcomes for infant and mother have been associated with young maternal age, lower maternal education (63% of Aboriginal[1] women have less than high school wducation,) unmarried (59% of Aboriginal women were single parents), low income, obesity (29% of Aboriginal women were obese and an additional 27.5% overweight) inadequate prenatal care and unplanned pregnancy.[1, 2] Aboriginal women are at increased risk of experiencing each of these risk factors, indeed, 64% to 84% of teens attending Aboriginal schools report sexual involvement, compared to 44% of other Canadian teens,[3] potentially increasing the risk of unplanned or unwanted pregnancy. Finally, factors which adversely influence maternal and infant outcomes, such as smoking (52% of Aboriginal women reported smoking during pregnancy), alcohol and drug use, are higher among Aboriginal adolescent and women. Additional adverse influences on pregnancy outcomes include poor maternal social support, mental health, stress, all of which are elevated among Aboriginal women.[4] *It is in this context that efforts to optimize reproductive health from preconception to infancy be considered.*

A Discussion of the Results

This review for promising and best practices to improve maternal, reproductive and newborn health identified 1036 articles of which 762 were original research articles. A total of 108 articles were included for full review and further assessment, based on the selection criteria. A total of 21 articles representing 18 programs and practices were included in the review for maternal, reproductive, and newborn health. These studies addressed issues of reproductive health from preconception through to postpartum. Among the studies that discussed these 18 programs, services, or interventions, five used qualitative methodology, ten used quantitative methodology and three used mixed (qualitative and quantitative) methods. Fifteen of twenty-one scientific appraisals were 'mid' to 'high' in methodological quality. Fourteen of these 21 programs and activities were appraised 'mid' to 'high' with regard to cultural sensitivity and alignment.

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[1] 'Aboriginal' here refers to First Nations, Inuit, and Métis populations in Canada; 'Indigenous' refers to Indigenous populations internationally. 'Aboriginal' is also used to refer to the group of Indigenous Australians also known as Aboriginals.[1]

In general, programs and practices were targeted to remediate behaviours to improve maternal or infant outcomes, such as HIV testing and antiviral therapy, drug and alcohol avoidance, and attendance at prenatal care. Midwifery was the strategy most often investigated as a mechanism to provide care closer to home and to support women during pregnancy, particularly those in rural, remote and northern communities.

Despite a plethora of information on the critical influence of the social determinants of health (poverty, violence, literacy) on health outcomes, none of the programs/practices identified in this review addressed these. Aboriginals living in Canada represent 3.8% of the total Canadian population, but represent 18% of the incarcerated population, and 30% of the child welfare population,[5, 6] and 24.4% of the AIDS HIV populations.[7] Over 40% of Aboriginal children living off reserve live in poverty.[5] None of the programs , or activities acknowledged the challenges individuals who had experienced incarceration, child welfare or poverty would face in attempts to optimize their reproductive and parenting potential.

Given the anecdotal evidence of intergenerational alcohol misuse, and the finding that 73% of Aboriginal survey respondents said that alcohol use was a problem in their communities,[5] there is a possibility that some pregnant women have organic brain damage as a consequence of being exposed to alcohol while *in utero*. None of the research indicated that it considered the cognitive and parenting capacity of the individual involved in the program in the design and implementation of the program, retention or evaluation strategies. Few programs/practices indicated inclusion of the partner, father or mother as a supportive person for the pregnant women, or as an ally or advocate for behavior change. Consequently, in a paradigm where the values of the group are paramount to successful and sustainable change, the majority of the published research continues to reference programs and practices that are directed toward individual action.

The limited nature and narrow scope of the scientific evidence, including the absence of evidence on comprehensive community based strategies to improve preconception and reproductive health of men and women of childbearing age would suggest that without investment, maternal and infant health will remain suboptimal for some time among Aboriginals. Currently, evidence informed strategies are plagued by a focus on individual action, which by its very nature is counter to the Aboriginal way of life and value structure. There is an absence of dialogue about community leadership, or about education related to the importance and opportunity of healthy childbearing and culturally competent parenting. There is limited research evidence to inform programs and practices about how to best invest in the preconception and prenatal periods (adolescence) as critical opportunities for education and behavior change related to pregnancy prevention and planning, healthy diet and weight, folic acid, prenatal care, smoking, alcohol use, relationships and parenting.

Better Understanding of the Identified Programs and Activities

The following summary provides insights related to maternal, reproductive, and newborn health and will be presented in three stages that characterize reproductive health: the preconception period, prenatal period, and postpartum period. The preconception period addresses the health of women of childbearing age prior to pregnancy. Prenatal period spans from conception through to labour and delivery. Postpartum care includes the health of both mother and infant after delivery.

Preconception Period

Two of the identified programs and practices addressed contributors to health during the preconception period. Preconception issues documented in the literature included prevention of FASD and HIV testing.

Fetal Alcohol Spectrum Disorder

Fetal Alcohol Spectrum Disorder is caused by prenatal alcohol ingestion.[8, 9] It is the leading cause of preventable mental retardation and there is no known lower limit of exposure which has evidence of safety.[10] Evidence in this review of practices to improve Aboriginal health suggested that case management may be effective in reducing the risk of an alcohol exposed pregnancy among women who were drinking during pregnancy or who had previously given birth to a child with FASD.

Insights

- This strategy is anchored in a model of individual behaviour change among those already identified at risk;
- Enhanced case management as a preconception health strategy showed some evidence of success among the at risk population, especially among those individuals interested in abstaining from alcohol consumption;
- There is an absence of evidence on primary prevention of FASD which would involve preconception education, school and community based programs that support alcohol abstention for those who could become pregnant;
- There is an absence of evidence on how the physical, social and political environment can be modified to reduce the precursors to alcohol misuse among adolescent women and those of childbearing age.

HIV-AIDS

Aboriginals living in Canada accounted for 24.4% of HIV cases while representing only 3.8% of the overall population, indicating an overrepresentation of HIV-positive Aboriginal peoples.[7, 11] Given the high rates of teenage pregnancy at 100 births per 1000[12] people, ongoing HIV testing has been proposed to support preconception and reproductive health. Evidence from this research suggested that among those who had been tested for HIV, the most commonly reported reasons for getting HIV-AIDS were unprotected sex (i.e. without a condom) or pregnancy, including suspected pregnancy.[13]

Insights

- This strategy is anchored in a model of individual action among those who may see themselves as ‘at risk’.
- This preconception strategy provides some insight into what motivates adolescents to seek testing.
- There is an absence of evidence on best practice information related to the broader issue of primary prevention of HIV (e.g. safe sex practices, protection against injection drug use and HIV transmission)
- There is an absence of evidence on how the physical, social and political environment can be modified to reduce the precursors to HIV infection and transmission among women of childbearing age

Prenatal Period

Prenatal care issues documented in the literature related to culturally sensitive care (n=9), reduction in drug and alcohol use during pregnancy (n=3), maternal mental health (n=1), maternal-fetal transmission of HIV (n=2), and labour and delivery (n=2).

Culturally Sensitive Care

Midwifery models have been proposed as a strategy to provide culturally sensitive prenatal care, which address the preference of Aboriginal women and their families to have delivery services in their own communities.[14] Optimal midwifery care should incorporate healing aspects of Aboriginal midwifery and tradition and be led by community elders, with the clinical skill of the 'Western' medical care system,[15] consequently, midwifery programs have been implemented and evaluated as a method to improve prenatal and delivery care.

Insights

- Midwifery has demonstrated evidence of successful birth outcomes as measured by infant birth weight and mortality among the low risk maternity population
- A midwifery approach, as well as those which include a cultural broker (Aboriginal Support Worker) situates birth within a model of health and family development, which can be aligned with Aboriginal culture and traditions.
- There is an absence of evidence on best practice information related to the broader issue of engagement of midwives in optimizing health prior to pregnancy, and limited information in the research literature on how midwifery care addresses issues of maternal well-being during pregnancy such as alcohol, smoking, nutrition, obesity, domestic violence, stress, social support, preparation for breastfeeding and parenting.
- There is an absence of evidence on potentially positive unintended outcomes of local practices based on midwifery concepts related to improvements in the collective social capital of a community, including improved capacity building, local development of health care provider skills and improved integration of traditional and western models of pregnancy care.
- There is a possibility of significant cost savings in local birth delivery, with improved medical and psychosocial outcomes for low risk pregnant women and their families.[16]
- There is an opportunity to understand how the physical, social and political environment has been positively influenced by midwifery to potentially generalize these findings to improve preconception and early parenting.

Mental Health

Based on the Edinburgh postpartum depression survey (recently validated for use in pregnancy), 38% of Aboriginal women attending an urban prenatal program had symptoms suggesting major depression, 68% had symptoms of minor depression.[17] The adverse influence of depression during pregnancy includes poor social function, emotional withdrawal and excessive concern about pregnancy and parenting.[18] Women with depression during pregnancy are at greater risk of postpartum depression and psychosis.[19] Infants of depressed mothers are less likely to be breast fed,[20, 20] more likely to experience poor interactions[21] and are at increased risk of developmental delay.[22]

Insights

- Opportunities for effective screening and identification of women at risk of poor mental health exist, and can be used in the prenatal period.
- Opportunities to identify women who may benefit from early intervention to reduce the risk of postpartum depression exist, and can be implemented within a community setting.
- Primary prevention strategies to optimize maternal mental health should be investigated given the adverse influences of maternal mental health of children and partners.
- There is an absence of evidence on best practice strategies related to the engagement of health service providers and community leaders in addressing maternal well-being during pregnancy and potential risks to well-being such as alcohol, smoking, nutrition, obesity, domestic violence, stress, social support, preparation for breastfeeding and parenting.
- There is an absence of evidence on culturally appropriate strategies to optimize maternal mental health.
- There is an opportunity to understand how the physical, social and political environment adversely influence mental health, and consequently, what could be modified to optimize pregnancy and early parenting

HIV Transmission from Mother to Infant

Prenatal HIV testing is offered to women to prevent HIV maternal-infant transmission.[23] Perinatal HIV transmission can be reduced by antiretroviral treatment, elective caesarean delivery and avoidance of breastfeeding.[24] Among pregnant, HIV-positive women, prenatal care through a multidisciplinary team, which included two Aboriginal health workers, a public health nurse, a clinician, and a secretary, reduced the likelihood of maternal-infant HIV transmission.[25]

Insights

- The success of this program suggests that strategic, focused intervention including case management, support for medication use and counseling behavior change can be implemented within a community setting.
- The costs associated with prevention of transmission through this intensive case management approach are substantially less than the costs associated with ongoing treatment of affected newborns.
- There is an opportunity to understand how this strategy of HIV transmission prevention can be integrated into the broader context of optimal maternal and infant health.

Alcohol, Drug, or Tobacco Use during Pregnancy

Consumption of alcohol, drugs, or tobacco during pregnancy increases the risk of adverse birth and childhood outcomes.[26, 27] There are concerns about elevated rates of binge drinking and tobacco (52% smoking prevalence) use among some Aboriginal communities which adversely influence the life chances of the infant, mother and family.[28] Three programs or practices were identified in the literature that addressed these issues. The FASD prevention strategies included an enhanced case management approach among those at high risk of an alcohol exposed pregnancy, and a community development approach to FASD prevention. The other study focused on understanding the attitudes and behaviors women had towards smoking during pregnancy.

Insights

- These strategies are likely to represent a small to negligible fraction of the programs and practices that have been designed to support pregnant Aboriginal women in behavior change, suggesting that promising practices may exist, but may not appear in the literature.
- Evidence suggests that to reduce the prevalence of smoking during pregnancy women would need to be supported by changes in community attitudes towards smoking, and an improved understanding of the risks of smoking.
- Primary prevention strategies to reduce or delay the onset of smoking should be considered within the context of comprehensive health strategies
- Cultural attitudes towards alcohol, drug and tobacco use need to be considered in program/practice planning. The positive associations that substance use has with relaxation, socializing, fun and inclusion need to be considered in the development and redesign of programs or activities to support desired behavior.
- There is an absence of evidence on culturally appropriate strategies to encourage healthy behaviours.
- The community environment and its influence on individual behaviour has not been adequately investigated or considered in terms of supporting desired behaviours.

Labor and Delivery

Three programs and practices were identified that incorporated a holistic health model (including the medicine wheel) as a strategy to support pregnant Aboriginal women. These included active case management, mentorship from elders and peers, access to Aboriginal health workers and establishment of sustainable community based programs. Further, active management of third-stage labor reduced blood loss by mothers.

Insights

- Evidence suggests active management of third stage labor reduces blood loss, and consequently can be included in routine labor and delivery practice.
- Community based strategies that encourage women to attend early in pregnancy may also be important to optimize labor and delivery outcomes based on findings that women who were optimistic and well prepared for labor ‘did better’ then women with less care.[29]

Postpartum Period

Only one article was identified that addressed issues of postpartum care, and no specific outcomes were reported.

Insights

- There are meaningful gaps in evidence about programs/practices that optimize postpartum care, including early detection of postpartum depression, initiation and continuation of breastfeeding and healthy maternal behaviours.
- Further information on the strengths and limitations of existing programs and practices would be of value in informing the development of effective programs and the allocation of resources.

Recommendations

To improve outcomes for Aboriginal mothers and infants, the following recommendations are offered:

1. Investments in culturally and community considerate preconception health education, programs and strategies is of paramount importance to reduce the incidence and outcomes associated with unplanned pregnancies, alcohol exposed pregnancies, sexually transmitted disease, risky prenatal behaviours, unwanted parenting and suboptimal educational attainment among young parents.
2. The lack of evidence based programs in the area of preconception health indicates that projects should be developed along the continuum from evaluation to research, and be based on the well defined principles of community development and guidelines for collaboration in Aboriginal communities.
3. There may be an opportunity to capitalize on the preconception period as a starting time period from which to impact overall Aboriginal health. That is, by improving preconception health, there may be improved birth, infant and child health; in this way, a cycle of sustained and improved health may be initiated.
4. Midwifery and birthing support models that increase the opportunity for low risk pregnant women to deliver in their home community have evidence of safety, acceptability and effectiveness. These, and other promising programs and strategies that are culturally and linguistically considerate, should be reviewed to identify success factors that could be generalized across settings.
5. The unintended positive outcomes of local midwifery care should be included in evaluations of impact, including improved mental health, capacity building, and additional role models.
6. Midwifery approaches may be amenable to expansion to address preconception health and culturally competent parenting. This expanded content expertise and job description may increase the feasibility of this model in communities where birth numbers are low.
7. Investments in culturally and community considerate postpartum and parenting programs and strategies is of paramount importance to address issues of breastfeeding, bonding and attachment, well baby care, immunization, and oral health to optimize the opportunities for early development and learning.
8. The lack of evidence based programs/practices relating to postpartum care indicate that projects should be developed along the continuum from evaluation to research, and be based on the well defined principles of community development and guidelines for collaboration in Aboriginal communities.

Child Health and Well-being

Aboriginal children experience infant mortality rates 1.7 to 4 times higher than non-Aboriginal infants, higher rates of sudden infant death syndrome, childhood injury, accidental death, suicide, ear infections, dental caries, and respiratory tract illness.[30] Increased exposure to toxins and contaminants places Aboriginal children at additional risk for poor health outcomes.[31] The circumstances in which many Aboriginal children are growing up violate the United Nations Convention of the Rights of the Child, to which Canada is a signatory.[32] Moderate to severe food insecurity is experienced by 33% of Aboriginal families, compared to 9% of non-Aboriginal families, and access to nutritious food is twice as costly for those in rural, remote/Northern locations. Between 10% and 21% live in environments where the water is unsafe or contaminated.[33] Unemployment rates in excess of 30% are over four times the non-Aboriginal rates in Canada (among those over 15 years of age),[34] and 41% of Aboriginal children living off reserve, live in poverty. [35] Aboriginal children are more likely than non-Aboriginals to live in rental accommodation, in overcrowded conditions or in homes in need of major repair.[36]

Despite these dire physical circumstances, there is optimism among the youth. The aspirations of Aboriginal teens suggest that over 75%, living either on or off reserve, believe that anyone who works hard can ‘rise to the top’, they will get the job they want, they will live more comfortably than their parents, and they will marry. Fifty one percent of Aboriginal teens off reserve and 39% of those on reserve expect to graduate from university.[3] Consequently, strategies to improve the physical and social environment which are based on sustainable culturally considerate principles of Ownership, Control, Access and Possession[37] (OCAP), combined with the vision and energy of the upcoming generation provide hope for the future.

A Discussion of the Results

This synthesis review of programs and activities, based on database searches, resulted in the appraisal of 108 articles. Of all articles appraised (n=108), 21 programs and activities (services and/or interventions) were ‘included’. More frequently addressed than any other topic, seven programs or practices addressed healthy lifestyle promotion (n=7), followed by oral health, mental health, and substance abuse (each n=3), followed then by vaccinations, diabetes, and education (each n=2). Fetal Alcohol Spectrum Disorder and telehealth were addressed in one program each.

Many of the identified programs/practices promoted healthy lifestyle choices in an effort to improve overall health and well-being through the lifespan. Indeed, by improving nutrition and activity levels, there may be reduced incidence of obesity, diabetes, cardiovascular disease and many other chronic conditions. Fewer programs and practices addressed remedial contributors to health, suggesting that there may be an opportunity to capitalize on existing momentum with prevention and promotion strategies.

Programs did recognize the importance of family and community in the engagement of Aboriginal communities. Indeed, many programs/practices provided family level counseling or parental involvement in the intervention practice.

Better Understanding the Identified Programs and Practices

The following summary provides insights related to child health and well-being and will be presented in three stages of childhood: early childhood, middle childhood, and adolescence.

Early Childhood

Of five practices focused primarily on children aged birth to five years, one addressed breastfeeding and early nutrition, two addressed the positive outcomes associated with fluoride treatments, and two addressed immunization.

Breastfeeding and Early Nutrition

The Canadian guidelines for infant feeding indicate that exclusive breastfeeding for the first six months of life is preferred.[38] Exclusive breastfeeding provides optimal nutrition, and potentially reduce the long term risk of obesity[39]. Evidence suggests that although breastfeeding initiation can be high, maintenance was poor, and was combined with early introduction of solid food and cow's milk.[2] By age 4, 28% of children had a body mass index above the 85th percentile. Attending prenatal classes and having postpartum support had positive influences on feeding decisions, including breastfeeding and delay of solid food.[2]

Insights

- There is an opportunity to normalize attendance at prenatal (and parenting) groups to improve knowledge, attitudes and behaviours.
- There is an opportunity to develop culturally appropriate prenatal and parenting strategies that build upon community, social support and group norms to improve knowledge, attitudes and behaviours
- This information likely represents a small to negligible fraction of the programs and services that have been designed to support breastfeeding, nutrition and healthy weights, suggesting that promising practices may exist, but may not appear in the literature.
- There is an absence of evidence on how the physical, social and political environment can be modified to improve nutritional outcomes for infants and children.

Oral Health and Dental Caries

Dental caries affects 68% of American Indian/Alaskan Native children aged 2 to 4 years (compared to 11% of Caucasian children).[40] Caries occur as a consequence of diet, oral hygiene and cariogenic bacteria (*Streptococcus mutans*) in the mouth.

Insights

- Repeat fluoride varnish combined with caregiver counseling reduces the risk of dental caries, and can be applied in community and school based settings.
- There was community acceptance of oral health protocols and there may be opportunity to leverage this success with other child health related messages and strategies.

Immunization

Immunization programs established for Australian Aboriginal and Torres Strait Islanders, and for Alaskan natives were effective in reducing the incidence of invasive pneumococcal disease and *Haemophilus influenza* type B (respectively).

Insights

- Immunization rates for Aboriginals living in Canada should be determined.
- There was community acceptance of immunization strategies and there may be opportunity to leverage this success with other child health related messages and strategies.

Middle Childhood

Of nine practices focused primarily on children aged 6 to 13 years, six practices addressed ‘healthy lifestyles’ (physical activity and nutrition), and one practice each addressed oral health, reading and telehealth assessment of ear, nose and throat concerns. Improving access to nutritional food, such as fresh fruit and milk, through school based programs should be considered to reduce meal skipping and has been shown to reduce average monthly antibiotic prescription rates by seven fold. Strategies for the implementation of programs and practices designed to improve healthy choices, which include media campaigns, school based curricula, grocery store ‘information’ posters and cooking demonstrations show evidence of cultural and community acceptance. Variable results with program implementation and effects suggest that ongoing evaluation be undertaken to ensure early detection of unintended effects. Ongoing efforts to support oral health which included school based tooth brushing reduced dental caries rates significantly over a three year period.[41] Strategies to improve reading, language and literacy warrant attention as a potential mediator of high school completion rates. Access to specialist services through telehealth may provide access to needed expertise in rural, remote and Northern communities.

Insights

- Multi-pronged, multi year, collaborative, community based, culturally considerate approaches are essential to improve the nutritional and physical well-being of Aboriginal children. The importance of local leadership and vision is paramount.
- Strategies that improve access and affordability of healthy food should be implemented immediately.
- There was community acceptance of locally developed strategies to address child health, and consequently, there may be opportunity to leverage these strategies to address other child health issues.

Adolescence

Of three practices focused primarily on adolescents aged 14 and over, one practice each addressed community based Aboriginal games, Aboriginal health workers in substance abuse services, and alcohol prevention strategies.

Insights

- This report likely represents a small to negligible fraction of the programs and services that have been designed to reduce risk behaviour among adolescents, and indeed, promising practices may exist, but may not appear in the literature.
- Holistic approaches to improved physical and mental health, e.g. Aboriginal games, are aligned with Aboriginal values and community organization. Critical factors for success include leadership and community engagement and control.

Recommendations

To improve the probability of optimal outcomes for the next generations of Aboriginals living in Canada, particularly children and youth, the following recommendations are offered.

1. Youth Leadership and Development: Strategies that build youth capacity across the domains of intellectual, technical, social and cultural development should be implemented and evaluated. These programs are critical to address the current gaps noted in reproductive health and would serve to reduce the risk of unplanned pregnancy and unsupported parenting.
2. Strategies that engage the time, attention and enthusiasm of youth, such as engagement in Aboriginal games, arts and culture, should be implemented and evaluated as long term approaches to address suboptimal adolescent physical and mental health. These community based, holistic approaches should be evaluated as potentially contributing to a long term reduction in the need for programs to combat adolescent risk behaviours, including alcohol, drug and tobacco use, unsafe sex, depression and suicide.
3. Incorporation of OCAP[37] (Ownership, Control, Access and Possession) into the design and development of interventions will improve the chances that program outcomes are beneficial to Aboriginal individuals and communities.
4. Issues of access to nutritious food, clean water, safe and secure housing are fundamental to the long term improvement of child health.
5. Comprehensive well child health strategies are needed to improve the physical well-being of Aboriginal children, including immunization, dental health, well child and developmental assessments.
6. Culturally considerate, comprehensive community based strategies should be developed and evaluated to normalize the acquisition of knowledge, attitudes and behavior related to culturally competent parenting across the lifespan. These strategies will be most successful if championed by elders, and community leaders.
7. Culturally considerate, comprehensive early childhood strategies should be developed and evaluated that incorporate Aboriginal values of early childhood which highlight the relationships between oral health, nutrition, obesity, physical activity, sleep, play and mental health.
8. Telehealth, and other strategies that improve access to care and expertise should be pilot tested, evaluated and implemented where effective.

Respectfully,

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September, 2009

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