# Giving birth in a good way: co-designing culturally safe birthing services with Inuit from Nunavik and their service providers

Hilah Silver
Department of Family Medicine
McGill University, Montreal, Canada
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## Abstract

### Background

Indigenous Peoples in remote regions of Canada are routinely transferred outside of their communities for birth - a practice known as childbirth evacuation. Recent evidence links childbirth evacuation with negative health and social impacts. Evacuation affects Inuit in Nunavik (Inuit territory in Northern Quebec), where at least 14% of people leave their communities for birth. Moreover, rapid population growth risks exceeding service capacity for local birthing in the region, recognized for its revitalization of Inuit midwifery and community birthing. With widening inequities in perinatal outcomes between Inuit and non-Indigenous in Quebec, there is a pressing need for culturally safe service re-design of childbirth evacuation, alongside support for continued local birthing in Nunavik.

### Objectives and methods

This doctoral project engaged Inuit and their service providers in Montreal and Nunavik to support culturally safe Inuit birth in the context of evacuation and local birthing. Four objectives guided the thesis by publication:

Objective 1: Assess the factors and outcomes associated Indigenous childbirth evacuation in Canada as the foundation for stakeholder mobilization and engagement in service re-design, using a scoping review of the literature (addressed in Publication 1).

Objective 2: Collate the visions of Inuit evacuated for childbirth and their Montreal service providers about birth in a good way in the context of evacuation, using fuzzy cognitive mapping (FCM) (addressed in Publication 2).

Objective 3: Develop a list of priority recommendations, implement, and evaluate these with service providers and Indigenous patient partners at the McGill University Health Centre (Publication 3).

Objective 4: Examine Inuit and Nunavik service providers' perspectives on supporting perinatal wellness and birth in a good way in Nunavik, along with pathways for continued childbirth in the region, using FCM (Publication 4).

## Results

Collating the research on Indigenous childbirth evacuation, the scoping review illustrated numerous emotional, social, and cultural harms. It highlighted a need to re-evaluate childbirth evacuation, considering knowledge gaps regarding its long-term impacts on Indigenous perinatal outcomes (Publication 1). A local application of FCM with 8 Inuit and 24 service providers in Montreal generated 17 recommendations for culturally safer childbirth evacuation. Operator-independent weighting, based on Harris' discourse analysis helped collate stakeholder perspectives (Publication 2). A narrative description illustrated the implementation of four co-designed cultural safety interventions with Indigenous stakeholders and service providers. Tested against a modified theory of planned behaviour, an Indigenous-led cultural safety training demonstrated positive influence on service provider knowledge and actions (Publication 3). FCM with 16 Inuit and 9 service providers illustrated 13 protective factors of birth in a good way in Nunavik. Well-equipped medical facilities, local birth centres, and Inuit perinatal traditions had the strongest influence. For Inuit youth, instrumental and emotional support for mothers and families, along with health and self-care in pregnancy were the most influential factors for perinatal wellness. 21 Inuit and 7 providers identified 12 factors for continued community birthing in Nunavik, with local birth centres and well-equipped medical facilities being the most influential (Publication 4).

## Conclusion

Inuit and their service providers have detailed knowledge of culturally safe birth in the contexts of evacuation and local birthing. FCM collated Inuit and service provider visions, refining a method for stakeholder input and mobilisation in an area of shared concern. FCM illustrated a clear community vision for continued childbirth in Nunavik.

## Résumé

### Contexte

Les Autochtones des régions éloignées du Canada sont régulièrement transférées hors de leurs communautés pour accoucher - une pratique connue sous le nom d'évacuation pour l'accouchement. Des données récentes établissent un lien entre l'évacuation pour accouchement et des répercussions négatives sur la santé et la vie sociale. L'évacuation affecte les Inuits du Nunavik (territoire inuit du nord du Québec), où au moins 14 % des personnes sont contraintes de quitter leur communauté pour accoucher. De plus, la croissance rapide de la population risque de dépasser la capacité des services d'accouchement locaux dans la région, reconnue pour sa revitalisation de la profession de sage-femme inuite et de l'accouchement en milieu communautaire. Compte tenu des inégalités croissantes entre les Inuits et les allochtones du Québec en matière d'accouchement, il est urgent de repenser les services d'évacuation des naissances en tenant compte de la culture, tout en soutenant la poursuite des accouchements locaux au Nunavik.

### Objectifs et méthodes

Ce projet de doctorat a impliqué les Inuits et leurs fournisseurs de services à Montréal et au Nunavik afin de soutenir l'accouchement inuit culturellement sécuritaire dans le contexte de l'évacuation et de l'accouchement local. Quatre objectifs ont guidé la thèse par publication:
Objectif 1 : Évaluer, à l'aide d'une revue de la littérature, les facteurs et les résultats associés à l'évacuation des Autochtones pour accouchement ou pour la naissance au Canada comme base pour la mobilisation et l'engagement des parties prenantes dans la refonte des services (abordée dans la publication 1).
Objectif 2 : Rassembler les visions des Inuits évacués pour l'accouchement et de leurs fournisseurs de services montréalais sur la façon d'accoucher dans de bonnes conditions dans le contexte de l'évacuation, à l'aide de *fuzzy cognitive mapping* (FCM) (abordée dans la publication 2).
Objectif 3 : Élaborer une liste de recommandations prioritaires, les mettre en œuvre et les évaluer avec les prestataires de services et les patients Autochtones partenaires du Centre universitaire de santé McGill (publication 3).

Objectif 4 : Examiner, à l'aide de la FCM, les points de vue des Inuits et leurs fournisseurs de services au Nunavik sur le soutien au bien-être périnatal et à l'accouchement dans de bonnes conditions au Nunavik, ainsi que sur les voies à suivre pour poursuivre l'accouchement dans la région (publication 4).

**Résultats**

En rassemblant les recherches sur l'évacuation des Autochtones pour accouchement, l'étude exploratoire a mis en évidence de nombreux préjudices émotionnels, sociaux et culturels. Elle a fait ressortir la nécessité de réévaluer l'évacuation pour accouchement, compte tenu des lacunes dans les connaissances concernant ses effets à long terme sur la santé de femmes et enfants Autochtones (publication 1). Une application locale de la FCM avec 8 Inuits et 24 prestataires de services à Montréal a permis de formuler 17 recommandations pour une expérience d'évacuation culturellement sécuritaire. Une méthode d'analyse basée sur l'analyse du discours de Harris, a permis de rassembler les points de vue des parties prenantes (publication 2). Une description narrative a mené à la mise en œuvre de quatre interventions de sécurisation culturelle conçues conjointement avec des Autochtones et des fournisseurs de services. Testée par rapport à une théorie modifiée du comportement planifié, une formation de sécurisation culturelle menée par des Autochtones a exercé une influence positive sur les connaissances et les actions des prestataires de services (publication 3). La FCM au Nunavik, à laquelle ont participé 16 Inuits et 9 prestataires de services, a mis en évidence 13 facteurs de protection favorisant une naissance dans de bonnes conditions au Nunavik. La présence d'installations médicales bien équipées, les centres de naissance locaux et les traditions périnatales inuites ont eu l'influence la plus forte. Pour les jeunes Inuits, le soutien instrumental et émotionnel aux mères et aux familles, ainsi que la santé et les autosoins pendant la grossesse étaient les facteurs les plus influents pour le bien-être périnatal. 21 Inuits et 7 prestataires ont identifié 12 facteurs pour le maintien de l'accouchement en milieu communautaire au Nunavik, les centres de naissance locaux et l'équipement adéquat des es établissements médicaux étant les plus influents (Publication 4).

**Conclusion**

Les Inuits et leurs fournisseurs de services ont une connaissance détaillée de l'accouchement culturellement sécuritaire dans les contextes d'évacuation et d'accouchement local. La FCM a rassemblé les visions des Inuits et des prestataires de services, en affinant une méthode de participation et de mobilisation des parties prenantes dans un domaine d'intérêt commun. La

FCM a illustré une vision communautaire claire pour promouvoir la poursuite des accouchements au Nunavik.

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## List of abbreviations & definitions

Fuzzy cognitive mapping (FCM). a visual display of people's causal knowledge of a subject. Maps are made up of concepts (nodes) connected by arrows (edges).

Inuulitsivik Health Centre (IHC)

High Risk Pregnancy: pregnancy that involves increased maternal and/or infant health risks secondary to co-morbidities (e.g. gestational hypertension, gestational diabetes, congenital anomalies, etc.)

McGill University Health Centre (MUHC)

National Collaborating Centre for Indigenous Health (NCCIH)

Neonatal intensive care unit (NICU)

Nunavik Regional Board of Health and Social Services (NRBHSS)

Pan American Health Organization (PAHO)

Perinatal outcomes: Maternal, neonatal, and infant health outcomes in the perinatal period (the period from pregnancy up to one year postpartum), including but not limited to maternal morbidity and mortality, low birth weight, preterm birth, small for gestational age, stillbirth, neonatal death, etc.

Sudden infant death syndrome (SIDS)

Social Network Analysis (SNA)

Tri-Council Policy Statement (TCPS2)

Truth and reconciliation commission (TRC)

Ungava Tulattavik Health Centre (UTHC)

World Health Organization (WHO)

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This thesis was conducted in the communities of Nunavik and in Tio'ta:ke (Montreal), the unceded territory of the Kanein:keha'ka nation.

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## Contribution to original knowledge

This manuscript-based thesis comprises four scientific articles: two published, and two under review. I submit this thesis as a contribution to the field of research on Indigenous maternal health, with a focus on (i) participatory methods that integrate stakeholder perspectives into intercultural research in the context of significant power differentials (Chapters 3 and 5); (ii) evidence on the associated factors and outcomes of Indigenous childbirth evacuation in Canada (Chapter 2); (iii) strategies for engaging settler service providers and Indigenous stakeholders in the co-design, implementation, and evaluation of cultural safety interventions (Chapter 4) and; (iv) operational definitions of culturally safe birthing services and perinatal wellness for Inuit in the context of evacuation and community birthing (Chapters 3 and 5).

Manuscript 1 (Chapter 2), published in the journal *Women & Birth* is the first study to systematically collate more than 50 years of research on Indigenous evacuation for childbirth in Canada. Following a standardized protocol, it synthesizes the published and gray literature to thematically illustrate the factors and outcomes associated with childbirth evacuation. Illustrating important knowledge gaps in a field dominated by settler researchers, it contributes an evidence base to inform the cultural safety re-design of childbirth evacuation services for Indigenous Peoples living in rural and remote communities in Canada.

Manuscript 2 (Chapter 3), published in the journal *Birth* presents the perspectives of Inuit evacuated for childbirth and their Montreal-based perinatal service providers on factors that support culturally safe Inuit birth in the context of evacuation. Participatory fuzzy cognitive mapping (1) (FCM) illustrated the meaning and operational terms for culturally safe Inuit birth. To my knowledge, this research was the first to use an operator-independent approach (2) to weighting causal knowledge depicted in FCMs with Inuit from Nunavik. It indicates the relevance of this method – adapted from Zellig Harris' original discourse analysis (3) - to mapping with Inuit from Nunavik, lending support to the applicability of this tool in communities for whom participant weighting is not feasible or meaningful.

Manuscript 3 (Chapter 4) is a practice paper currently under review by the Journal of Transcultural Nursing. It presents the implementation and partial assessment of co-designed cultural safety interventions with Inuit and Cree of Eeyou-Ischtee informed by the FCM in Chapter 3. Its primary contribution is the narrative description of the process of Indigenous

stakeholder engagement in the cultural safety redesign of high-risk maternity services, which has wider application and relevance. This paper also offers strategies for increasing settler service providers' engagement in enhancing the cultural safety of their service along with tools for assessing the impact of cultural safety educational interventions, such as the modified theory of planned behaviour (acronym CASCADA).

Manuscript 4 (Chapter 5) presents the perspectives of Inuit and Nunavik-based perinatal service providers on protective factors for perinatal wellness and culturally safe birth in Nunavik, along with strategies for community-based birthing. Applying the operator-independent weighting of FCMs described in Chapter 3, it reinforces the relevance of FCM as a meaningful tool for community participation in health research among Inuit in Nunavik. To my knowledge, this is also the first research to seek Inuit youth perspectives on maternal and family perinatal wellness. This manuscript is currently under review by the Nunavik Regional Board of Health and Social Services.

## Contribution of authors

*Manuscript 1 (Chapter 2): Childbirth evacuation among rural and remote Indigenous communities in Canada: A scoping review*

I designed the protocol for the scoping review and developed the search strategy in collaboration with Indigenous health librarian, Martin Morris. Together with Drs Sarmiento and Pimentel, I selected the studies and extracted the data. Dr Vang, Richard Budgell, Drs Cockcroft and Andersson supported the analysis and the final drafting of the article. All authors read, contributed to, and approved the final manuscript.

*Manuscript 2 (Chapter 3): Giving birth in a good way when it must take place away from home: Participatory research into visions of Inuit families and their Montreal-based medical providers*

Alongside Sophie Tukalak, I co-facilitated all the mapping sessions. I developed the standardized factor and category lists, and Sophie Tukalak contributed to refining the categorization of all factors in the maps. Dr Sarmiento provided support and supervision for the transitive closure and discourse analysis of the maps. I conducted all the member-checking session to verify the results with participants. Drs Vang, Cockcroft, Andersson, and Richard Budgell supported the analysis and the final drafting of the article. All authors read, contributed to, and approved the final manuscript.

*Manuscript 3 (Chapter 4): Co-designing Culturally Safe Indigenous Birth in High-Risk Obstetrics: Implementing Joyce's Principle with Inuit and Cree Families and their Medical Providers*

Together with Dr Sarmiento, Paasa Lemire, Sophia Kapellas, Mischa Corman-François, and Andrès Rojas Cardenas, I developed the pre- and post- training survey for staff, as well as the family experience survey. Dr Sarmiento and Andrès Rojas Cardenas collected the data. Dr Sarmiento conducted the CASCADA analysis of the results under the supervision of Dr Andersson. Dr Andersson provided a critical appraisal of the approach and its theoretical considerations. I wrote the first and subsequent drafts of the manuscript with input of all co-authors. All authors read, contributed to, and approved the final manuscript.

*Manuscript 4 (Chapter 5): Bringing birth back home: community and service provider visions for perinatal wellness and continued Inuit childbirth in Nunavik.*

Pasha Saviakjuk and Elisapi Padlayat facilitated the cognitive mapping sessions in Nunavik. I developed the standardized factor and category lists, while Pasha Saviakjuk and Elisapi Padlayat contributed to refining the categorization of all factors in the maps. Dr Sarmiento provided support and supervision for the transitive closure and discourse analysis of the maps. Together with Elisapi Padlayat, I facilitated all the member checking sessions with mapping participants. Drs Vang, Cockcroft, Andersson, and Richard Budgell supported the analysis and the final drafting of the article. All authors read, contributed to, and approved the final manuscript.

# Chapter 1: Introduction

Indigenous Peoples in higher income countries experience striking inequities in perinatal outcomes compared with non-Indigenous populations (4-6). A review of Indigenous perinatal outcomes in Canada, Australia, New Zealand, and the United States notes infant mortality rates are higher among Indigenous children, with significant disparities in sudden infant death syndrome (SIDS) and respiratory infections as leading causes of death (4). Indigenous infants in Canada, Australia, and the United States are also more likely to be born stillborn, prematurely (before 37 weeks gestation), and with a low birth weight (except First Nations in Canada) (4). Moreover, in these economically prosperous settings, the disparities in perinatal outcomes are particularly striking among Indigenous living in rural and remote communities (4, 7, 8).

In many cases, the disparities in birth outcomes are compounded by a lack of access to local perinatal care services (8-11). While primary health services are accessible in some remote and rural communities, specialized perinatal care is predominantly available in large urban settings (5, 8, 9, 11, 12). In the absence of local perinatal care many Indigenous Peoples, especially those with medically high-risk pregnancies, are left with no choice but to be transferred or medically evacuated outside of their communities for pregnancy related care and childbirth (hereafter childbirth evacuation) (5, 6, 9). Where local maternity services are available, childbirth evacuation routinely takes place towards the end of the third trimester, with earlier transfer for medically high-risk pregnancies (10, 12, 13).

In Canada, persistent inequities in Indigenous/non-Indigenous perinatal outcomes despite decades of routine childbirth evacuation, cast double on the policy's ability to close the health gap (4, 14-16). Indeed, a compelling body of scholarship links childbirth evacuation with multiple negative health and social impacts (17-19). Research on childbirth evacuation indicates the policy is an important, though inadvertent driver of disparities in perinatal outcomes in at least two ways. First, research in economically prosperous countries links long distance travel for birth with higher rates of premature birth (20, 21) and neonatal mortality (22), as well as longer admissions in neonatal intensive care units (NICU) (23). Pregnant people traveling long-distances for perinatal care are more likely to experience an unplanned out of hospital birth (23-25), birth in a hospital without obstetric services (5, 21), higher rates of birth-related medical interventions (23), and birth-related maternal complications and co-morbidity (20, 26, 27).

Moreover, these associations appear to be distance-dependent, with longer distances linked to worse outcomes (22, 23, 26).

Although Indigenous Peoples in Canada make up a greater proportion of rural and remote populations (9), their experience of long-distance travel for birth is further compounded by significant service delivery inequities. As a recent Canadian study of over 31,000 births notes, rural Indigenous families travel significantly longer distances for birth than non-Indigenous families, independently of medical indications or complications of pregnancy (9). The role of distance as a mediator of perinatal outcomes is therefore especially concerning for extremely remote Indigenous communities such as those in Inuit Nunangat (Inuit artic homeland in Canada), where routine evacuation transfers childbirth thousands of kilometers away from home (10, 13).

Second, several studies have linked birth away from home with poorer maternal satisfaction and negative birth experience for Indigenous Peoples (10, 12, 13, 18, 28, 29). In wider scholarship, negative birth experience is associated with post-traumatic stress disorder (30, 31), poor maternal-infant bonding and interpersonal conflict (32), postnatal depression (33), fear of childbirth (34), and greater desire for elective cesarian section (32). Recognizing the importance of maternal experience of childbirth, the World Health Organization's (WHO) recommendations for intrapartum care emphasize the importance of both a safe *and* positive experience of childbirth (35).While extensive scholarship documents numerous adverse impacts of negative birth experience, less is known about protective factors of positive or even neutral experiences of birth (32), with emerging research pointing to continuous labour support (36), midwifery care (37), and a sense of control/agency (38-40) as compelling protective global factors. Efforts to close the gap in Indigenous perinatal outcome disparities among rural and remote communities must therefore endeavour to (1) bring birth closer to home and (2) support a positive experience of childbirth, wherever it may take place (9, 11, 13). Two approaches – cultural safety and decolonization – can help to support the revitalization of local birthing and positive experiences of childbirth regardless of location.

**Cultural Safety: definitions and possibilities for Indigenous perinatal care**

The role of culture as a social health determinant for Indigenous women is well-recognised in Canada (41-43). Advocacy for cultural safety approaches in healthcare for Indigenous Peoples in

Canada is motivated by the understanding that a "one-size-fits-all" model of health service delivery is neither effective nor appropriate (28, 43). Developed by Maori nurses in New Zealand, cultural safety is concerned with power relations and how they play out in patient-provider interactions, as well as broader healthcare systems (43). Cultural safety requires a "safe space for an encounter with patients that is sensitive and responsive to their social, political, linguistic, economic, and spiritual realities" (44 pp.157). Recognizing a power imbalance inherent in patient-provider relationships, cultural safety seeks to redefine the relationship and shift power and responsibility to patients. As a result, cultural safety is not measured in the extent of a provider's knowledge or skill but defined in terms of a patient's feeling of safety in a clinical encounter – it is the patient who decides what is or is not culturally safe (44). Importantly, cultural safety addresses the unique position of Indigenous Peoples vis-à-vis other cultural minorities; it acknowledges their primary position on the land while seeking to challenge the impacts of intergeneration trauma and contemporary manifestations of settler-colonialism have on their health (43).

Emerging evidence on culturally safe perinatal care for Indigenous Peoples illustrates promising impacts on perinatal outcome inequities and maternal experiences of childbirth, with benefits extending to both childbirth evacuation and local birthing. In Australia, culturally adapted midwifery services for First Nations women in three birth centers in the state of Victoria were associated with significantly higher levels of maternal satisfaction (45). An evaluation of the Malabar Midwifery Link Service providing culturally safe care to Aboriginal and Torres Strait Islander mothers and infants in Sydney Australia noted improved perinatal health outcomes above the national average, despite greater psychosocial complexity in the population (46). In Canada, Indigenous women birthing at the Seventh Generation Midwives Toronto birth center reported the services were culturally safe, fully meeting their pregnancy, birthing, and general reproductive needs (47). A systematic review of Indigenous doula services for Indigenous mothers in Canada and the United States identified the potential of culturally continuous birth accompaniment to improve Indigenous maternal-infant perinatal outcomes in the context of childbirth evacuation (48). In Canada, a systematic review of Indigenous women's perspectives of perinatal care services associated women's positive experiences with respectful, holistic, and non-judgemental patient-provider interactions that take into consideration the cultural contexts of

Indigenous women (28). On the other hand, negative experiences of perinatal care involved racism, cultural insensitivity, and a perceived lack of control over their care (28).

**The limits of cultural safety**

In Canada, scholars identify important limits to cultural safety's capacity to ensure equitable perinatal care and health outcomes for Indigenous Peoples (41). Chief among them is the assumption underlying cultural safety that Indigenous Peoples seeking perinatal care have a clear understanding of what is culturally (un)safe. By attributing an inherent understanding of what is (un)safe to Indigenous women in particular, cultural safety overlooks the ways in which the Canadian settler state has uniquely targeted Indigenous women, their identities, and their bodies.

Carrie Bourassa illustrates clearly how anti-Indigenous racist and heteropatriarchal policies have "othered" Indigenous women in Canada, both within their communities and Canadian society at large (49). Through governmental policies such as the Indian Act and its various amendments, racist and heterosexist notions about the role of women were imposed upon Indigenous communities, systematically stripping women of their Indigenous identities, their social roles, and cultural heritage (49). This "othering" of Indigenous women in Canada has important implications for culturally safe perinatal care initiatives. As Bourassa points out, "the development of culturally appropriate services will not be useful for women who have been excluded from the definition of that culture and excluded from the decision-making structures that will determine how Aboriginal health resources are to be designed and distributed" (49 pp.26). As such, cultural safety must contend with how settler colonial and heteropatriarchal policies and discourses have shaped contemporary dynamics within Indigenous communities, as well as the experiences of Indigenous women within the Canadian settler-state. When it comes to securing safe and equitable perinatal care for rural and remote Indigenous communities, a decolonizing framework offers additional tools.

**Beyond cultural safety: decolonizing perinatal care for rural and remote Indigenous communities**

There is longstanding agreement that peoples' health is influenced by a wide array of social determinants. The WHO defines the social determinants of health as "the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life" (50). Compelling evidence suggests that determinants of Indigenous

Peoples' health differ from those of the larger non-Indigenous population in Canada (51-53), largely because of settler colonialism (54, 55). Defined by Dene scholar Glen Coulthard as a "set of hierarchical social relations that continue to facilitate the dispossession of Indigenous peoples of their lands and self-determining authority" (56 pp.7), contemporary settler colonialism continues to be a critical distal determinant of health for Indigenous Peoples in Canada. As Czyzewski (54) notes, it is "structural and systemic contexts [that] make for colonialism to be distal. Distal determinants are generally beyond the individual or community's control and are the causes of causes for unjust life situations for certain groups or people over others" (pp.4). From this perspective, we can understand the persistent and widening disparities in Indigenous perinatal outcomes and access to local perinatal care as the product of anti-Indigenous racist ideologies, policies, and institutions (55). As such, any attempts at securing equitable perinatal outcomes for rural and remote Indigenous Peoples must therefore seek to decolonize the ideologies, structures and institutions involved in perinatal care delivery both locally and in the context of childbirth evacuation.

Across various definitions, decolonization illustrates the possibilities for returning childbirth to traditional territories of rural and remote Indigenous communities. Coulthard advocates for and defines decolonization as "land-connected practices and longstanding experiential knowledge that inform and structure our ethical engagements with the world and our relationships with human and nonhuman others over time" (56 pp.13). For Anishinaabe feminist Dory Nason, decolonization is located in the "values and traditions that serve as the foundation for the survival of the land and Indigenous peoples" (56) (pp.177). Furthermore, decolonization offers guidance in transforming current perinatal care policies and structures to support a positive childbirth experience. As previously noted, a sense of control over one's experience of childbirth is foundational to a positive experience. Since decolonization is an *active* process of giving up land, power, and privilege back to Indigenous Peoples (57), it holds tremendous potential for restoring the authority and autonomy that have been systematically stripped away from Indigenous Peoples in childbirth.

The idea of decolonizing Indigenous perinatal care receives support from an extensive body of scholarship on the need for locally designed, Indigenous-led solutions to the current inequities in perinatal outcomes and access to local services in rural and remote settings in Canada (58), Australia (59) and New Zealand (11). On the international stage, this is echoed in article 23 of

the International Declaration on the Rights of Indigenous People, which calls for Indigenous Peoples "to be actively involved in developing and determining health, housing and other economic and social programs affecting them and, as far as possible, to administer such programs through their own institutions" (60 pp.32).

**Closing the gap in birth inequities among Inuit in Nunavik**

Supporting community-based childbirth and improving the experience of evacuation are especially important in Nunavik (Inuit territory in northern Quebec, Canada) where inequities in perinatal outcomes are stagnating and even widening (14, 16, 61). Nunavik is home to approximately 13,000 people living in fourteen communities along the Hudson and Ungava coasts (52). The communities ranging in population from 170 to 2300 are connected primarily by airplane, with sea travel reserved predominantly for the transportation of cargo during the summer months (62).

Unique to the territory, revitalized local midwifery services have successfully returned a significant number of births, earning international renown for their hybrid traditional Inuit/Western midwifery model (63). A relatively young and multiparous population, the average maternal age at birth is 25 years (Van Wagner, personal communication Jan 28, 2024). Inuit living in the seven communities on the Hudson coast are served by the Inuulitsivik Health Centre (IHC), whose services include a Level 1 hospital in Puvirnituq, and three maternities: local midwifery-run birthing facilities for medically low-risk pregnancies in Puvirnituq, Inukjuak and Salluit (13). Between 2000-2015, Inuulitsivik midwifery services have successfully kept 86% (n=2,346) of childbirth in the region, with 75% (n=1,760) of births attended by Inuit midwives (Van Wagner, personal communication Jan 28, 2024). Those living on the Ungava coast have access to a Level 1 hospital and Maternity in Kuujjuaq under the direction of the Ungava Tulattavik Health Centre (UTHC). Between its opening in 2008 until 2012, Ungava Tulattavik midwifery services have reduced out of region transfers for pregnancy-related care and childbirth by 54% (n=333) (64).

Local birthing in Nunavik faces two important challenges. First, rapid population growth threatens to overwhelm local midwifery capacity. In a 2015 report, the Nunavik regional board of health and social services notes "spectacular growth" among a population whose birth rate is almost twice as high as the rest of Quebec (64). With a projected population increase of 39.7%

by 2031 and 420 local births annually by 2023, the report advocates for critical infrastructural and health service delivery redesign to maintain quality midwifery care in the region (64).

The second challenge to the future of local birthing are the widening disparities in perinatal outcomes among Inuit in Nunavik that local midwifery services alone cannot hope to solve. Research among Inuit from Nunavik, documents a disconcerting rise in morbidity and mortality outcomes including low birth weight, prematurity, and stillbirths, in striking contrast to a significant decrease in non-Indigenous neonatal mortality in the province (16). A 2015 study published by the government of Quebec found Inuit children were six times more likely to die in infancy than other children in Quebec (65). According to the report, the significant inequity in Inuit infant mortality is due to a host of social health determinants such as malnutrition, overcrowded housing, food insecurity, prenatal exposure to environmental contaminants, poverty, and social stressors (65). Inequities in social determinants of health also significantly affect Inuit women in pregnancy. The 2015 study found that Inuit report high rates sexually transmitted infections, alcohol and tobacco consumption, and gestational anemia related to food insecurity and poverty (65). As gaps in perinatal outcomes continue to wide in the face of continued inequities of social determinants of health, Inuit childbirth evacuation rates are likely to remain unchanged at best, or even increase.

In addition to the previously mentioned risks associated with long distance travel for birth, Inuit childbirth evacuation is linked with severe and even life-threatening *social* risks. Recent investigative reports document several instances of Inuit transferred to Montreal for healthcare who fell through the net of services to find themselves unsheltered and exposed to physical assault and exploitation by drug and prostitution rings (66, 67). These accounts, as well as informal interviews I conducted with frontline workers in Montreal prior to commencing my research confirm the urgent need for strategies that strengthen a supportive network of maternity health services for Inuit evacuees and support continued community-birthing in Nunavik.

Lastly, reinforcing the need to continue supporting community-birthing efforts in Nunavik is compelling evidence on the cultural significance of childbirth to Inuit and other Indigenous Peoples in Canada. Scholarship spanning several decades illustrates the tremendous importance of childbirth to Inuit in maintaining connections with the land and shaping collective cultural identities (17, 68, 69). Reclaiming control over childbirth safeguards collective traditions (63,

69) and can heal the impacts of colonial intergenerational trauma (70). For Inuit, the significance of childbirth on traditional territories is powerfully conveyed in the words of an elder: "To bring birth back to the communities is to bring back life" (70 pp.384).

## Purpose of the Thesis: Methodological approach, objectives, and research questions

### *Project Context & Description of Setting*

The thesis comprises the first phase of a longitudinal participatory project whose aim is to implement stakeholder-led, co-designed interventions to support culturally safe Inuit birth in the contexts of childbirth evacuation and local birthing in Nunavik. The notion of culturally safe birth was succinctly articulated by an Inuk member of the project's advisory committee as '*giving birth in a good way'*. My thesis explored the definitions of culturally safe Inuit birth in the context of childbirth evacuation and community-based birthing, with fieldwork taking place in Montreal and in Nunavik.

Northern research setting: Nunavik perinatal services

Reflecting the diversity of Inuit communities in Nunavik described above, Nunavik data collection for my dissertation took place in a variety of settings aided by three key services: the maternities and associated health centres described above, the Nunavik network of family houses, and the Integrated Services in Perinatality and Early Childhood (ISPEC or SIPPE in French). Where SIPPE or family houses were not available, we conducted research activities in schools, community centers, and hotel conference rooms.

1. *Family Houses*. In 2010, Nunavik's Regional Partnerships Committee, composed of the directors of all regional institutions and organizations proposed the development of a network of family houses in response to the acute social issues facing Inuit families (71). Linked by a shared objective to support wellness and harmony at the individual, family and community levels, each family house has specific aims and services, responding to the unique needs of its community (72).
2. *SIPPE*. Ilagiilluta – meaning "let's be family" in Inuktitut - is the local adaptation of the Quebec government's SIPPE program in Nunavik. With the mandate to "Promote physical and mental well-being of families by offering supportive services which answer

their needs" Ilagiilluta plays a central role in supporting pregnant women and families with young children in Nunavik (73).With deployment planned in all fourteen communities, Ilagiilluta offers wrap around perinatal services including home visits, culturally adapted perinatal counselling, pre/postnatal and traditional group activities, in collaboration with community programs such as community soup kitchens and family houses (73). Alongside midwifery services, a 2015 report by the regional health authority identified Ilagiilluta as a foundational player in the continuum of perinatal services (64).

Montreal research setting

1. *The McGill University Health Centre (MUHC).* As the tertiary hospital receiving the majority of Inuit evacuations for childbirth, the MUHC serves as the main southern research site for the project. Fieldwork was conducted in the three units providing perinatal care to Inuit women: (i) Obstetrical Ambulatory Clinic, (ii) Antepartum/Postpartum unit, and (iii) Birthing Centre.
2. *Ullivik*. Ullivik is the Montreal-based lodging facility for Inuit transferred to Montreal for healthcare services. Under the direction of the IHC in Nunavik, it is the link between the health institutions in the McGill University Integrated Health Network (RUIS) in Montreal and the northern communities of Nunavik. It provides accommodation, transport, and interpreter services, as well as and liaison midwifery and nursing services to Inuit evacuated for pregnancy-related care and childbirth.

### *Advisory Committee*

The longitudinal project of which my PhD is the first phase, is guided by an advisory committee whose role is to approve the project design and oversee its execution. Members include Inuit and non-Inuit midwives from Inuulitsivik and Ungava Tulattavik Health Centres in Nunavik (IHC and UTHC), an Inuk community leader and vice-principal of a local school in Nunavik, an Inuk community wellness worker, a physician from IHC, a liaison midwife from Ullivik, an obstetrician the MUHC, and a representative from the SIPPE program.

### *Methodological Framework*

The thesis and longitudinal project are guided by a participatory research framework. As a public health approach, participatory research combines research and action to address health challenges (74). As a discipline, participatory research extends beyond participation *in* research,

and is instead grounded in "systematic co-creation of new knowledge by equitable partnerships between researchers and those affected by the issue under study, or those who will benefit from or act on its results" (74 pp.155). Participatory health research employs stakeholder-led interventions in which researchers and end-users co-design and co-own health solutions (75).This collaboration ensures that the solution designed to address the identified problems are aligned with the context and needs of those most impacted by it (76). This helps to improve the reach, uptake, and effectiveness of the intervention. Emerging scholarship supports participatory research in addressing systemic health inequities in Indigenous maternal child health (11, 58, 77). A recent realist review of Indigenous prenatal health programs across Canada found that high levels of community investment, participation, and leadership were associated with positive program changes across a range of maternal-child health outcomes (58).

### *Thesis Objectives & Research Questions*

The purpose of the thesis is to explore Inuit and their service providers' understandings and definitions of culturally safe birth – or giving birth in a good way. As the first phase of the longitudinal study, my thesis addresses the initial participatory conceptualization and naming of the issue. *What* participants define as giving birth in a good way, and *how* they believe it can be implemented in the contexts of evacuation and community-based childbirth, is a central line of inquiry. The thesis aims to identify the meanings and operational terms of the objectives in the longitudinal project, clarifying the outcomes expected by different stakeholders as to inform the design and evaluation of interventions. It explored Inuit and service providers' knowledge of giving birth in a good way according to four research objectives presented in Table 1.

Table 1. My doctoral research program

| **Objective** | **Research Questions** | **Methods** | **Participants** | **Outcomes** |
|---|---|---|---|---|
| Assess the factors and outcomes associated Indigenous childbirth evacuation in Canada as the foundation for stakeholder mobilization and engagement in service re-design, using a scoping review of the literature | (1) What are the factors and outcomes associated with childbirth evacuation among rural and remote Indigenous communities in Canada? | Scoping review of peer-reviewed and gray literature that identified factors and outcomes associated with Indigenous childbirth evacuation in Canada (Chapter 2) | Not applicable | Summary of factors and outcomes associated with Indigenous childbirth evacuation in Canada according to the literature.<br>Identification of knowledge gaps in the field and recommendations for future research. |
| Collate the visions of Inuit evacuated for childbirth and their Montreal service providers about birth in a good in the context of evacuation, using fuzzy cognitive mapping (FCM) | (2) What does giving birth in a good way in the context of evacuation to Montreal mean for Inuit and their perinatal service providers? | FCM modelling the knowledge of Inuit evacuees and their southern perinatal service providers on definitions of culturally safe birth (Chapter 3) | 8 Inuit<br>24 service providers | Protective factors for Inuit culturally safe birth in the context of childbirth evacuation to Montreal according to stakeholder perspectives. |
| Develop a list of priority recommendations, implement, and evaluate these with service providers and Indigenous patient partners at the MUHC | (3) How can Indigenous stakeholders and their perinatal service providers be engaged in co-design, implementation, and evaluation of cultural safety interventions in a high-risk obstetrics setting? | Narrative description of the implementation of cultural safety interventions at the MUHC (Chapter 4)<br>CASCADA analysis of the impact of an Inuit-led cultural safety training for perinatal service providers | 44 service providers (CASCADA questionnaire participants) | A practice paper describing the implementation and preliminary assessment of stakeholder-led co-designed cultural safety interventions in high-risk obstetrics. |

| | | | | |
|---|---|---|---|---|
| Examine Inuit and Nunavik service providers' perspectives on supporting perinatal wellness and birth in a good way in Nunavik, along with pathways for continued childbirth in the region, using FCM | (4a) What does giving birth in a good way in Nunavik mean for Inuit and their perinatal service providers?<br>(4b) What do Inuit and their service providers believe can help keep childbirth in Nunavik?<br>(4c) What are protective factors of family perinatal wellness according to Inuit youth? | FCM modelling the knowledge of Inuit and perinatal service providers on definitions and pathways for culturally safe birth, perinatal wellness, and community birthing in Nunavik (Chapter 5) | 62 Inuit<br>16 Service providers (Inuit and non-Inuit) | Protective factors for Inuit culturally safe birth in the context of community-based birthing in Nunavik according to stakeholder perspectives<br>Strategies for supporting continued community-based birthing according to stakeholder perspectives.<br>Protective factors for Inuit maternal and family perinatal wellness according to stakeholder perspectives. |

*Description of methods*

Fuzzy Cognitive Mapping

A key concern in multi-stakeholder intercultural research is whose knowledge defines the issue and conceptualizes the solutions. Reconciling different perspectives is particularly challenging within a settler colonial context where longstanding power inequities between Indigenous Peoples and settlers are deeply rooted. For Nunavik communities bearing disproportionate burdens of poverty and poor health, an equity-based approach is key to redressing such power inequities, and their associated injustices across multiple settings including health care (55). According to the WHO, an equity-based approach to health care implies "that everyone in need of health care receives it in a form that is beneficial to them (78) (pp.7). Furthermore, interrogating and naming the "causes of the causes" at the root of health inequities is foundational to an equity-based approach (55). My thesis used fuzzy cognitive mapping (FCM) (79) as the primary tool to explore operational definitions and solutions to the complex inequities in perinatal care for Inuit in Nunavik. Capable of visually modelling complex causal knowledge in an accessible way, FCM is well suited to interrogating the root causes of health inequities.

Originally developed by graph-theory mathematicians, cognitive mapping has been used extensively in the past 50 years in ecological management, information technology, economics, organizational behaviour, and health development (1, 80, 81). A useful end point or product of cognitive maps is identifying concepts impacting an issue, as well as the causal links, or connections between them. Maps can be made "fuzzy" or approximate by asking participants to quantify the inter-relations between concepts, and the perceived strength of the causal links (direct and indirect) with the outcome (1). For example, participants might identify poor mental health as an outcome of childbirth evacuation. To approximate that association, they would rate it on a scale of 1-5 (1 being a weak association and 5 being a very strong association). The output is a map on a given issue (e.g., childbirth evacuation) that displays the different factors and outcomes associated with the issue, according to the knowledge and experience of the group (e.g., Inuit or service providers).

FCM has demonstrated wide applicability in modelling local perspectives and solutions to Indigenous and maternal health challenges in Nunavik (82), Mexico (83), and Nigeria (84).

Although helpful for discussing complex issues across differing linguistic, cultural, and literacy levels, recent research in Nunavik found numerical weighting held little meaning or relevance for the participants (82). In lieu of numerical weighting, I opted for an operator-independent method to assign weights to the maps made by participants (2). This alternative weighting strategy draws on discourse analysis proposed by linguist Zellig Harris (3), who derived structural meaning from the *frequency* of discourse elements or morphemes (part of a word, word or several words with an irreducible meaning).

In collaboration with our Inuit researchers, I created a list of standardized names for all the concepts in the maps with similar meanings. I then used fuzzy transitive closure to convert each map into a knowledge network. As a probabilistic algorithm, transitive closure is used to adjust weights throughout the maps based on how factors are related to one another (85). By converting a map into a network with each relationship conditioned by surrounding relationships, it accounts for the interdependence between factors and outcomes identified by participants across multiple maps (85). In addition to identifying the strength of the *direct* relationship between concepts, transitive closure identifies "walks", or *indirect* relationships between factors in each map. I then counted the number of times a relationship appeared across all transitive closure maps, assigning a weight of 1 where a relationship was identified and 0 when absent. I summed the frequency of a relationship across all maps divided by the maximum number of relationships, converting the weights to a scale of -1 to +1. Cumulative weights closer to 1 indicated more frequent and influential relationships, and those closer to 0 were less influential.

Social network analysis centrality measures provided additional important guiding insights for actionable directions to support my thesis objectives. This helped to link the thesis with the next phases of the longitudinal project. Across participant maps, I used degree centrality to measure how "central" or connected a given concept was within a map (86). A concept with a high *in-degree centrality* has many incoming concepts linked to it and indicates a commonly identified outcome. A high level of *out-degree centrality*, in contrast, occurs in concepts with many out-going links and is used to identify concepts commonly regarded as causes.

Lastly, inductive thematic analysis as described by Braun and Clarke helped identify common patterns or themes in the maps (87). In collaboration with the Inuit researchers, I generated categories that grouped standardized themes in the maps. I then condensed the individual

category maps into a single overall category map per stakeholder group to facilitate comparison of perspectives synthesize the main themes and action areas from the maps.

### *Ethical Considerations*

#### Ethical guidelines

As a multi-site research study, my doctoral project received institutional ethics approval from the Research Ethics Board of the Research Institute of McGill University Health Centre, McGill Faculty of Medicine Research Ethics Board, and Inuulitsivik Health Centre. Both the longitudinal project and my thesis followed the ethical guidelines related to *Research Involving the First Nations, Inuit, and Métis Peoples of Canada (Chapter 9)*, outlined in the 2014 Tri-Council Policy Statement (TCPS2) for Ethical Conduct for Research Involving Humans (88), as well as the recommendations laid out by the National Inuit Strategy on Research (89). As outlined in the TCPS2, engagement with community is an integral part of ethical research involving Indigenous Peoples. Furthermore, the community must have an active role in shaping research (88). For the purposes of my research, the "community" referred to Inuit living in Nunavik, Inuit and/or Inuit-serving organizations in Montreal and Nunavik, and Inuit governing bodies in Quebec that provide social and health services to Inuit peoples as part of their organizational mission and activities.

#### Inuit Participants

The risks associated with participation in this study for Inuit participants were minimal. FCM sessions were conducted in Inuktitut and English by trained Inuit researchers. A standardized FCM mapping script approved for cultural appropriateness by the advisory committee of the longitudinal project guided me and the Inuit researchers in facilitating sessions while minimizing possible psychological and social risks to participants. Taking into consideration a long history of exploitative and non-consensual health research among Inuit (55), our consent process involved third party witnessed informed consent in both English and Inuktitut.

Fieldwork for my thesis took place during the COVID-19 pandemic. To maintain participants' safety during the fieldwork we took the following protective measures: (1) limited mapping groups to less than five participants, (2) complied with institutional policies regarding hand hygiene, masks, and symptom screening, and (3) provided personal protective equipment to all study participants and research staff. Working as a perinatal nurse during the pandemic raised

significant risks to community safety in the context of Nunavik mapping activities. As such, I assisted the Nunavik-based Inuit researchers remotely in their data collection, through regular meetings and debriefings.

For the Montreal fieldwork - where non-Inuit medical providers assisted in recruiting Inuit evacuees - potential power differentials with participants needed to be addressed. To ensure that Inuit recruited to the study did not perceive their medical care as contingent upon their participation in the study, an Inuk researcher acted as an intermediary. Medical providers screened potential candidates for risk factors. Those meeting the study's selection criteria were referred to the Inuk researcher who used an initial contact script approved by the advisory committee to broach participation. As Montreal fieldwork engaged participants with medically high-risk pregnancies, a referral mechanism to appropriate personnel at Ullivik directed participants who raised concerns about their health or the health of their fetus/baby during the mapping sessions.

### *A Note on Gender Terminology*

Taking gender into consideration is critical to understanding culturally safe birth for Inuit in Nunavik. As the Inquiry into Missing and Murdered Indigenous Women and Girls demonstrated, Indigenous female bodies in Canada have long been the target of a genocidal project, caught at the intersection of colonialism and heteropatriarchy (90). Childbirth evacuation – like forced sterilization - is a stark example of how the colonial settler state controls Indigenous Peoples by controlling the bodies of Indigenous women, leading them to bear unique health burdens (55). Although the terms "woman"/ "women" are frequently used throughout my research to refer to individuals giving or who have given birth, they do not reflect a diversity of gender identities. Rather, Inuit women could be better described as "birthing persons". In Nunavik, however, "women" and "woman" are most used, and alternative gender-neutral terminology was not suitable or relevant. Throughout the thesis, the terms "woman" "women" are used interchangeably to describe any individual who births and who accesses perinatal care services both in their home community and in the context of childbirth evacuation.

### *Positionality Statement*

As a settler to Canada, I do not share any cultural or historical links with Inuit. Aside from a few key phrases, I do not speak Inuktitut, nor have I ever visited Nunavik. In addition to the benefits

tied to my settler status, being a middle-class Ashkenazi Jewish woman means that I have lived a sheltered and privileged life to a degree unafforded to most Inuit. My work as perinatal nurse at the MUHC also brings with it several challenges to research with Inuit.

As emergency room pediatrician Dr Shaheen-Hussain explains, health service providers in Canada are members of a medical system that continues to actively participate in the genocide of Indigenous Peoples in Canada. Medical colonialism, which he defines as "the culture or ideology rooted in systemic anti-Indigenous racism, that uses medical practices and policies to establish, maintain, and/or advance a genocidal colonial project" (55 pp.118), means that I am complicit in injustices committed against Indigenous Peoples without conscious intention (55).

A few factors help mitigate the challenges brought by my position. First, while in no way comparable to the experience of Inuit, I have first-hand experience of intergenerational transmission of trauma related to the state-sanction genocide of my people and family in the Holocaust. Although I benefit enormously from dominant-group privilege in my day-to-day by being "white-passing", my people's history alongside personal experiences of antisemitism have given me a sense of what it feels like to be an outsider.

As critics of medical education point out, working in the medical establishment for many years, I have been socialized in the "hidden curriculum" of medical culture – the set of discriminatory and oppressive norms and values taken up and reproduced outside of any formal curriculum (91). Throughout my studies and clinical practice, I've worked to mitigate the effects of this "sticky knowledge" (91). I completed a minor concentration in gender studies in addition to my undergraduate nursing coursework, which gave me a set of critical skills for identifying intersecting oppressions and understanding their manifestations and mechanisms. Over the course of my graduate education, I attended seminars on Indigenous women's health, Inuit health, and Marxist critical theory.

Lastly, although my nursing role is fraught with challenges, it brings with it the possibility to alleviate the harms perpetuated by the medical establishment. As the primary nurse in the outpatient clinic for Inuit evacuees, I have had the privilege of working closely with many families, developing meaningful and lasting relationships. With their help, I have learned that as an insider to the medical establishment, I have the capacity to leverage my professional/insider influence to create concrete and meaningful change.

*Structure of the Thesis*

Chapter 1 of the thesis providers relevant background knowledge, situating my research program within the broader context of Indigenous maternal-infant health inequities in Canada and other economically prosperous settings. It briefly reviews the literature on long-distance travel for birth, which suggests that transferring women out of their communities for childbirth is unlikely to close the gap in perinatal outcome disparities. I then propose cultural safety and decolonization as useful theoretical frameworks to re-evaluate and design perinatal services for Indigenous Peoples in Canada. I go on to describe my research program, situating it within the participatory longitudinal project on culturally safe Inuit childbirth. This is followed by a description of methods and ethical considerations for my research work. I end with my positionality statement.

Chapter 2 is a scoping review of the literature on childbirth evacuation among rural and remote Indigenous communities in Canada. It presents manuscript 1: *Childbirth evacuation among rural and remote Indigenous communities in Canada: A scoping review* published in the journal *Women & Birth* in 2022. Submitted to the journal *Birth,* Chapter 3 of the thesis describes fuzzy cognitive mapping with Inuit families evacuated for childbirth and their Montreal-based perinatal service providers. The practice paper in Chapter 4 describes the implementation of cultural safety interventions co-designed by Inuit and Eeyou-Ischtee stakeholders and their perinatal service providers at the MUHC. This is manuscript 3 of my thesis: *Co-designing Culturally Safe Indigenous Birth in High-Risk Obstetrics: Implementing Joyce's Principle with Inuit and Cree Families and their Medical Providers*, currently under review by the *Journal of Transcultural Nursing*. Chapter 5 presents fuzzy cognitive mapping with Inuit and service providers in Nunavik on supporting culturally safe birthing and perinatal wellness in the region. It includes manuscript 4: *Bringing birth back home: community and service provider visions for perinatal wellness and continued Inuit childbirth in Nunavik.* It is currently under review by the NRBHSS.

Chapter 6 is a discussion of the thesis as a whole. I summarize the findings from the four manuscripts, situating them within the context of the larger body of published literature. I then describe the limitations of my research work, attending to both methodological and contextual considerations. Last, I put forward suggestions for future research directions. Chapter 7 providers

the conclusion and summary. An indexed annex collates supplementary materials and appendices associated with the four manuscripts.

## Chapter 2: A Comprehensive review of the literature

**Bridging statement**

The first manuscript of the thesis is a scoping review of the evidence on childbirth evacuation among rural and remote communities in Canada. As mentioned previously, interrogating the root causes of structural injustices is key to an equity-based approach to redressing the harms inflicted on Indigenous Peoples by the medical establishment (55). The following chapter is such an interrogation, examining the practice of childbirth evacuation among rural and remote First Nations, Inuit, and Métis communities in Canada between 1978-2019. By identifying the factors and outcomes associated with childbirth evacuation, the review aims to illustrate *why* evacuation happens, *how* it happens, and *what* its impacts are.

A review of the literature using systematic methods is important for several reasons. First, previous reviews of the literature on childbirth evacuation restricted themselves to scholarship emerging from specific regions or Indigenous groups in Canada (i.e. Inuit, Métis, or First Nations) (17, 19). Collating the evidence systematically across space, place, and time helps to illustrate the root causes of the distinct inequities associated with childbirth evacuation and their harmful impacts. A longitudinal examination of causes and outcomes across multiple communities also helps to disrupt the tendency within the medical establishment to attribute Indigenous People's poor health to personal or cultural attributes (55).

Second, scholarship on childbirth evacuation in Inuit Nunangat during the 1970s and 1980s, was immensely helpful to midwifery revitalization and childbirth repatriation efforts in Nunavik (92-95). An up-to-date review of the evidence using systematic methods is therefore useful to informing continued expansion of community birthing in Nunavik, as well as supporting cultural safety interventions in the context of evacuation. With participatory methods such as Weight of Evidence (96), findings from the review can also be formally integrated with local stakeholder perspectives to nuance and enrich the knowledge on the subject. Moreover, by including research conducted among, Inuit, First Nations *and* Métis communities, the review can inform policy and practice changes in Indigenous communities both within and outside of Inuit Nunangat.

Lastly, a concerning feature of longstanding discriminatory medical policies such as childbirth evacuation is that they become normalized – a taken for granted feature of a system in which medical providers maintain and reproduce harms without any conscious intention to do so (55). As Dr. Shaheen-Hussain cautions, "the danger with normalizing injustice is that even the most sensitive individual may become desensitized to the suffering it causes" (55 pp.15). This normalization is a significant potential obstacle to stakeholder engagement in participatory research aiming to re-design birthing services for Indigenous Peoples. By synthesizing the evidence from over 10,000 evacuated Indigenous births across five decades of research, the review illustrates the urgent need to address the harms associated with the practice, thus helping to disrupting this complicity and complacency. Indeed, in the context of my research program, presenting the evidence from the scoping review in departmental meetings, obstetric grand rounds, and nursing in-services was key to securing stakeholder engagement in the project. In collaboration with an Inuk midwife and representative of the advisory committee, the review's findings were also presented to the Quebec Minister of Families and disseminated to the wider public through a news report illustrating the impacts of evacuation on families in Nunavik (97).

**Childbirth evacuation among rural and remote Indigenous communities in Canada: A scoping review (Manuscript 1)**

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Hilah Silver[a,*], Ivan Sarmiento[a,b], Juan-Pablo Pimentel[a,b,c], Richard Budgell[a], Anne Cockcroft[a], Zoua M. Vang[d,e,f,g], Neil Andersson[a,h]

[a] *CIET-PRAM, Department of Family Medicine, McGill University, 5858 Chemin de la Côte des Neiges, Montreal, Quebec, H3S 1Z1, Canada*
[b] *Grupo de Estudios en Sistemas Tradicionales de Salud, Escuela de Medicina y Ciencias de la Salud, Universidad del Rosario, Bogota, Colombia*
[c] *Departamento de Medicina Familiar y Salud Pública, Facultad de Medicina, Universidad de La Sabana, Chia, Colombia*
[d] *Department of Sociology, McGill University, Montreal, Canada*
[e] *Department of Obstetrics and Gynaecology, McGill University, Montreal, Canada*
[f] *Division of Social and Transcultural Psychiatry, Department of Psychiatry, McGill University, Montreal, Canada*
[g] *Institute of Health and Social Policy, McGill University, Montreal, Canada*
[h] *Centro de Investigación de Enfermedades Tropicales, Universidad Autónoma de Guerrero, Mexico*

**Abstract**

*Problem:* Routine evacuation of pregnant Indigenous women from remote regions to urban centres for childbirth is a central strategy for addressing maternal health disparities in Canada. Maternal evacuation continues despite mounting evidence of its negative impacts on Indigenous women and families.

*Background:* Since the 1960s, pregnant Indigenous women living in remote regions in Canada have been transferred to urban hospitals for childbirth. In the following decades, evidence emerged linking maternal evacuation with negative impacts on Indigenous women, their families, and communities. In some communities, resistance to evacuation and the creation of local birthing facilities has resulted in highly diverse experiences of childbirth and evacuation.

*Aim:* A scoping review mapped the evidence on maternal evacuation of Indigenous women in Canada and its associated factors and outcomes from 1978 to 2019.

*Methods:* We searched MEDLINE, Embase, and CINAHL, and grey literature from governmental and Indigenous organizations. We collated the evidence on maternal evacuation into 12 themes.

*Results:* Factors related to evacuation include (a) evacuation policies (b) institutional coercion (c) remoteness and (d) maternal-fetal health status. Evacuation-related outcomes include (e) maternal-

child health impacts (f) women's experience of evacuation (g) financial hardships (h) family disruption (i) cultural continuity and community wellness (ij) engagement with health services (k) self-determination, and (l) quality of health services. *Discussion:* Numerous emotional, social and cultural harms are associated with evacuation of Indigenous women in Canada. Little is known about the long-term impacts of evacuation on Indigenous maternal-infant health. Evidence on evacuation from remote Métis communities remains a critical knowledge gap.

**Statement of significance**

*Problem*

Despite more than 50 years of research on maternal evacuation of remote Indigenous women in Canada, no review of the evidence used systematic methods.

*What is already known*

Existing literature links evacuation with numerous emotional, social, and cultural harms to Indigenous women, families and communities.

*What this paper adds*

Policy remoteness, institutional coercion and maternal-fetal health status are associated with maternal evacuation of Indigenous women. Evacuation-related outcomes include maternal-child health impacts, women's experience of evacuation, financial hardships, family disruption, impacts to cultural and community wellness, engagement with health services, self-determination, and quality of health services. These findings demonstrate a critical need to re-evaluate evacuation practices.

## 1. Introduction

Indigenous women living in Canada bear a disproportionate burden of poor maternal health, including adverse perinatal outcomes and maternal mortality [1,2]. The perinatal health disparities between Indigenous and non-Indigenous women in Canada have been linked to historical and contemporary policies that systematically disadvantage Indigenous women in particular ways [3]. Closing the gap in perinatal health disparities is complicated by the fact that 48% of Indigenous women live in rural or remote regions where access to specialized care is limited [4].

The Canadian governments' strategies for addressing rural and remote Indigenous women's poorer perinatal health profile has historically involved evacuating them to urban centers for childbirth. Beginning in the 1960s, many Indigenous women were forced to leave their

communities in their final trimester, and travel to regional or southern hospitals to give birth, in a process known as maternal evacuation [5]. Over subsequent decades, in an effort to address high maternal-infant mortality rates, growing govern- mental control over Indigenous childbirth led to increased evacuation and medicalization of Indigenous childbirth. By the early 1980s, almost all births took place outside most remote Indigenous communities [5].

Scholars have documented the challenges and adverse health outcomes associated with evacuation for childbirth since the 1970s [5]. Evacuation has received heavy criticisms from Indigenous communities and medical providers as a colonial policy that disrupts Indigenous cultural practices and eradicates traditional knowledges [6]. Since its inception, many Indigenous communities have resisted and challenged evacuation, working to return childbirth back to the land and revive traditional midwifery practices.

Efforts to return childbirth back to remote communities has contributed to considerable variation in rates and experience of maternal evacuation across Canada today. In some communities, local midwifery-run birthing facilities offer Indigenous women with medically low-risk pregnancies the opportunity to give birth surrounded by family, language and culture [7], while in other villages, all women are systematically sent out for childbirth regardless of their medical profile [8]. The timing of evacuation varies widely as well, with some mothers leaving their home communities for 1–2 weeks, while others spend months away from home awaiting childbirth [5].

*1.1 Rationale*

Indigenous communities that have succeeded in repatriating childbirth have been significantly aided by research on the effects of maternal evacuation. To the best of our knowledge, no previous literature review using systematic methods has explored the evidence on maternal evacuation among rural and remote Indigenous communities in Canada. As increasing numbers of communities strive to repatriate childbirth, a synthesis of the literature on evacuation can provide evidence for Indigenous-led research and policy change.

*1.2 Objectives*

Following the indications for scoping reviews outlined by Munn [9], the aims of this scoping review are threefold: 1) to map the existing knowledge of maternal evacuation among rural and remote First Nation, Inuit, and Métis communities in Canada; 2) to identify and analyze the gaps in the knowledge base and 3) to identify and evaluate the key factors and outcomes associated with maternal evacuation.

## 2 Methods

Our review followed the five-stage design developed by Arksey and O'Malley [10], and refined by Levac et al., [11] and the Joanna Briggs Institute [12]. The review sought to answer the questions "what research exists on maternal evacuation among rural and remote Indigenous communities in Canada?" and "what factors and outcomes are associated with maternal evacuation?". For this review, evacuation included both planned and emergency transfers of Indigenous women from their home communities to regional and/or urban hospitals during the perinatal period. We reported our review based on the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist (see appendix A) [13]. The protocol of our study is available from the authors upon request.

### *2.1 Inclusion criteria*

We included all English language empirical studies conducted among rural and remote Indigenous communities in Canada (Inuit, Métis, or First Nations) that investigate maternal evacuation, and its associated factors or outcomes. We did not limit publication dates due to the small number of publications. We excluded studies conducted among Indigenous communities outside Canada, or among urban Indigenous populations in Canada.

### *2.2 Information sources*

We developed in consultation with a librarian specializing in Indigenous health, using MEDLINE, CINAHL, and EMBASE. The electronic database search was supplemented by our hand searches of specific scientific journals, and online archives of recognized Canadian health and Indigenous organizations (see Fig. 1 for our search strategy). We screened all empirical studies, published and unpublished, including dissertations, book chapters and organizational reports.

### *2.3 Study selection and data extraction*

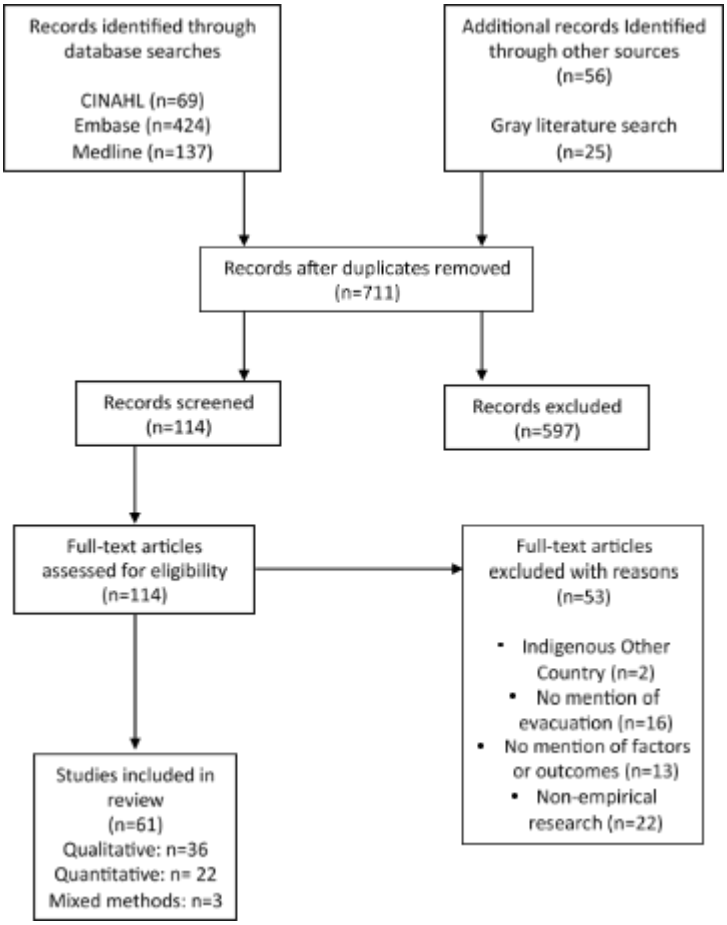
Our search identified 663 papers. Three non-Indigenous independent reviewers (HS, JP, IS) worked in pairs with a third independent reviewer throughout the selection and extraction phases. Using EndNote X9.0, we screened article titles and abstracts and eliminated duplicates. We subsequently screened 113 full-text articles for reporting on factors and outcomes associated with maternal evacuation. Paired reviewers resolved disagreements by consensus or discussion with the third reviewer. We used an eligibility form based on the inclusion criteria and calibrated it on 10% of the full text articles. A PRISMA diagram (Fig. 2) provides an overview of the process.

We developed a data extraction form and piloted it on 10% of the included documents. Two independent reviewers extracted the data separately, charting standard study information (author name, year of publication, journal, title of the document, study design, and population), and the factors and outcomes associated with maternal evacuation. Factors included any feature reported to be associated with or have an effect - positive or negative - on evacuation. Outcomes captured any reported consequences or results - positive or negative - attributed to evacuation.

1. exp Inuits/
2. inuit*.mp.
3. exp Indians, North American/
4. American Native Continental Ancestry Group/
5. "first nation*".mp.
6. metis.tw.
7. inuktitut.mp.
8. exp Nunavut/
9. nunavut.mp.
10. nunavik.mp.
11. cree.tw.
12. dene.tw.
13. haida.tw.
14. salish.tw.
15. mohawk.tw.
16. ojibway.tw.
17. yupik.tw.
18. eskimo*.mp.
19. "native american*".ti,ab,kw.
20. "native canadian*".ti,ab,kw.
21. "native people*".ti,ab,kw.
22. "american indian*".ti,ab,kw.
23. "Alaska* native*".ti,ab,kw.
24. "canadian aboriginal*".ti,ab,kw.
25. ontario.ti,ab,kw.
26. quebec.ti,ab,kw.
27. manitoba.ti,ab,kw.
28. saskatchewan.ti,ab,kw.
29. alberta.ti,ab,kw.
30. "british columbia".ti,ab,kw.
31. yukon.ti,ab,kw.
32. territory.ti,ab,kw.
33. 31 and 32
34. north?west.ti,ab,kw.
35. territories.ti,ab,kw.
36. 34 and 35
37. "newfoundland and labrador".ti,ab,kw.
38. newfoundland.ti,ab,kw.
39. labrador.ti,ab,kw.
40. 38 and 39
41. "nova scotia".ti,ab,kw.
42. "new brunswick".ti,ab,kw.
43. "prince edward island".ti,ab,kw.
44. canadian.jn.
45. canadian.ti,ab,kw.
46. exp Canada/
47. canada.ti,ab,kw.
48. aboriginal.mp.
49. "indigenous people*".mp.
50. tribal.ti,ab,kw.
51. circumpolar.ti,ab,kw.
52. polar.ti,ab,kw.
53. exp Arctic Regions/
54. arctic.mp.
55. regions.mp.
56. 54 and 55
57. or/1-24
58. 25 or 26 or 27 or 28 or 29 or 30 or 31 or 33 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47
59. 48 or 49 or 50 or 51 or 52 or 53 or 56
60. 58 and 59
61. exp Maternal Health Services/ or exp Maternal-Child Health Services/ or exp Maternal Health/ or exp Pregnancy/ or exp Gynecology/ or exp Obstetrics/
62. (maternal or maternity or pregnan* or gyn?ecolog* or obstetric*).tw,kf.
63. 61 or 62
64. (evacuat* or transfer* or medevac*).tw,kf.
65. exp Transportation of Patients/
66. 57 or 60
67. 61 or 62
68. 64 or 65
69. 66 and 67 and 68

*2.4 Synthesis methods*

We used theoretical thematic analysis to identify and synthesize themes related to our research questions [14,15]. Using Microsoft Excel, two reviewers independently separated data into factors or outcomes, and used line-by-line coding to collate them into descriptive sub-themes. All reviewers then refined the sub-themes through discussion and synthesized them into higher order analytical themes [15]. We did not conduct a quality appraisal of the included documents since this is not an objective of scoping reviews [13].




## 3 Results

We examined 61 studies including 43 published papers, 6 book chapters, 7 reports and 5 dissertations covering more than 10,000 births between 1978 and 2019 (see Table 1). Studies reviewed employed qualitative, quantitative and mixed methodologies. Thirty-one percent of the studies were authored by at least one scholar who publicly identified as Indigenous. Among the

three officially recognized Indigenous groups in Canada most studies examined maternal evacuation among the Inuit (54.8%) followed by First Nations (38.4%) and Métis (6.8%). Among those studies which reported on evacuation rates, these ranged from 12% to 100% of women being sent out from their communities.

We identified 12 themes related to maternal evacuation for childbirth. Four factors related to evacuation include (1) evacuation policies (2) institutional coercion (3) remoteness and (4) maternal-fetal health status. Seven outcomes related to evacuation include (1) maternal-child health impacts (2), women's experience of evacuation (3) financial hardships (4) family disruption (5) cultural continuity and community wellness (6) engagement with health services (7) self-determination, and (8) quality of health services.

*3.1 Factors related to evacuation*

*3.1.1 Evacuation policies*

Scholars of evacuation frequently point to the Health Canada policy requiring routine evacuation of pregnant women and its regional and provincial iterations, to explain the high rates of evacuation in Indigenous communities [16–24]. Backed by government and medical institutions, and facilitated by advances in transportation and communication, these policies are often cited as a conventional and self-explanatory cause. That is, Indigenous women are evacuated because it is policy. The view of evacuation policies as a taken-for-granted causes is illustrated by Spady [20] in one of the earliest studies of evacuation in the Northwestern Territories: "At the time of this study it was standard policy that mothers who had >5 pregnancies or who were outside the range of 17–34 years were routinely transferred from remote settlements to a hospital for delivery" (p.88).

Table 1: Study Characteristics

| No. | Year | Author | Study Design | Study Population (Inuit, Métis, First Nations) | Study Participants (sample size) |
|---|---|---|---|---|---|
| 1 | 1978 | Baskett | Longitudinal | Inuit (NWT) | Women (n=401)<br>Births n=622) |
| 2 | 1982 | Baskett et al. | Retrospective | Inuit (NWT) | Births (n=869) |
| 3 | 1990 | Binns | Retrospective | Inuit (Nunavut) | Births (n=1050) |
| 4 | 2006 | Bird | Qualitative Descriptive | First Nations Inuit | Women (n=43) Medical Providers (n=23) |

| | | | | | |
|---|---|---|---|---|---|
| 5 | 1988 | Bouchard | Retrospective | Inuit (Nunavik) | Births (n= 286) |
| 6 | 2011 | Brown et al. | Ethnography | First Nations (Nuxalk, Haida, and Kwakwaka'wakw) | Women (n=102)<br>Men (n=3)<br>Youth (n=5)<br>Elders (n=11) |
| 7 | 1993 | Carignan | Retrospective | Inuit (Nunavik) | Births (n=347) |
| 8 | 1998 | Chamberlain et al. | Prospective | Inuit (Keewatin) | Women (n=114) |
| 9 | 2000 | Chamberlain & Barclay | Qualitative Descriptive | Inuit (Nunavut) | Women (n=20)<br>Partners (n=3)<br>Community members (n=5) |
| 10 | 1998 | Chatwood et al. | Cross-sectional | Inuit (Nunavik) | Women (n=411) |
| 11 | 2017 | Cidro et al. | Grounded Theory | First Nations (Cree) | Women (n=31)<br>Births (n= 127) |
| 12 | 1990 | Daviss-Putt | Ethnography | Inuit | Women (N/A) |
| 13 | 1997 | Daviss | Ethnography | Inuit (Nunavik)<br>Inuit (Nunavut) | Women (N/A) |
| 14 | 2017 | Dawson | Ethnography | First Nations (Tlicho) | Women (n=10) |
| 15 | 1997 | Earnshaw | Mixed Methods | Inuit (Nunavut) | Births (n=350)<br>Medical providers (n=4)<br>Other (n=3) |
| 16 | 1998 | England | Retrospective | Inuit (Keewatin) | Births (n=38) |
| 17 | 2014 | Eni et al. | Qualitative Descriptive | First Nations | Women (n=65) |
| 18 | 2007 | Gold et al. | Qualitative Descriptive | Inuit (Nunavut) | Women (n=25)<br>Fathers (n=6)<br>Medical Providers (n=40)<br>Elders (n=16)<br>Community members (n=5)<br>Policy makers (n=5) |
| 19 | 1982 | Guse | Qualitative Descriptive | First Nations & Inuit (Keewatin) | Women (n=77) |
| 20 | 1993 | Hiebert | Mixed Methods | First Nations | Women (n=239) |
| 21 | 2003 | Hiebert | Ethnography | First Nations (Cree) | Women (n=60)<br>Administrators, Medical Staff (n=25) |
| 22 | 2004 | Houd et al. | Retrospective | Inuit (Nunavik) | Women (n=182) |
| 23 | 1997 | Jasen | Document Analysis | N/A | N/A |
| 24 | 1988 | Kaufert et al. | Ethnography | Inuit (Keewatin) | N/A |
| 25 | 1990[a] | Kaufert et al. | Retrospective | Inuit (Keewatin) | Births (n=1939) |
| 26 | 1990[b] | Kaufert & O'Neil | Retrospective | Inuit (NWT) | N/A |

| | | | | | |
|---|---|---|---|---|---|
| 27 | 1993 | Kaufert & O'Neil | Qualitative Descriptive | Inuit (NWT) | N/A |
| 28 | 2004 | Kornelsen & Grzybowski | Qualitative Descriptive | First Nations | Women (n=11) |
| 29 | 2010 | Kornelsen et al. | Qualitative Descriptive | First Nations (Heiltsuk) | Women(n=55) |
| 30 | 2011 | Kornelsen et al. | Qualitative Descriptive | First Nations (Heiltsuk) | Women (n=67) |
| 31 | 2012 | Lawford & Giles | Document Analysis | First Nations | N/A |
| 32 | 2018 | Lawford et al. | Qualitative Descriptive | First Nations | Women (n=7)<br>Community members (n=5) |
| 33 | 2019 | Lawford et al. | Ethnography | First Nations (Manitoba) | Women (n=18)<br>Politicians (n=18)<br>Medical Providers (n=12) |
| 34 | 1987 | Lessard & Kinloch | Retrospective | Inuit (NWT) | Women (n=512) |
| 35 | 1991 | Meyer & Belanger | Retrospective | Inuit (Nunavik) | Women (n=1257)<br>Births (n=1270) |
| 36 | 1979 | Murdock | Retrospective | Inuit (NWT & Nunavut) | Births (n=414) |
| 37 | 2011 | National Aboriginal Health Organization | Grounded Theory | Métis | Women (N/A)<br>Community members (N/A) |
| 38 | 2011 | O'Driscoll et al. | Qualitative Descriptive | First Nations | Women (n=13) |
| 39 | 1988 | O'Neil et al | Qualitative Descriptive | Inuit (NWT) | Women (N/A)<br>Community members (N/A) |
| 40 | 1990 | O'Neil & Kaufert | Qualitative Descriptive | Inuit | Women (N/A)<br>Community members (N/A) |
| 41 | 1990 | O'Neil et al. | Qualitative Descriptive | Inuit (NWT) | Women (n=71) |
| 42 | 2017 | Olson | Ethnography | First Nations | Women (n=3) |
| 43 | 1995 | Pauktuutit Inuit Women's Association | Qualitative Descriptive | Inuit | Elders (n=76) |
| 44 | 1990 | Paulette | Participatory Research | Indigneous (NWT) | Women (N/A)<br>Community members (N/A) |
| 45 | 1990 | Paulette | Ethnography | First Nations | Women (N/A) |
| 46 | 2010 | Phillips-Beck | Ethnography | First Nations (Ojibway) | Women (n=30)<br>Fathers (n=1) |
| 47 | 1994 | Rajsigl | Case-Control | Inuit (Nunavut) | Births (n=724) |
| 48 | 1990 | Robinson | Ethnography | First Nations (Cree) | Women (N/A) |

| | | | | | |
|---|---|---|---|---|---|
| 49 | 1991 | Robinson | Mixed Methods | First Nations (Cree) | Women (N/A) |
| 50 | 1991 | Sennet & Dougherty | Cross-sectional | Inuit (NWT) | Women (n=153) |
| 51 | 1982 | Spady | Prospective | Inuit, First Nations, Metis (NWT) | Inuit (n=473)<br>Metis (n=94)<br>First Nations (n=215) |
| 52 | 1988 | Stevenson | Retrospective | Inuit (Labrador) | Women (N/A) |
| 53 | 1990 | Stonier | Retrospective | Inuit (Nunavik) | Women (n=252) |
| 54 | 2014 | Struthers et al. | Qualitative Descriptive | Inuit (Nunavut)<br>First Nations (Cree) | Women (n=25)<br>Medical Providers (n=35) |
| 55 | 1996 | Tookalak et al. | Case Study | Inuit (Nunavik) | Women (n=3) |
| 56 | 1991 | Tourigny et al. | Mixed Methods | Inuit (Nunavik) | Medical Providers (n=88) |
| 57 | 2007 | Van Wagner et al. | Retrospective | Inuit (Nunavik) | Births (n=374) |
| 58 | 2012 | Van Wagner et al. | Retrospective | Inuit (Nunavik)<br>Cree (Nunavik) | Births (n=1382) |
| 59 | 2018 | Vang et al. | Grounded Theory | Inuit (Nunavik)<br>First Nations (Cree) | Women (n=25)<br>Medical Providers (n=8) |
| 60 | 1993 | Webber & Wilson | Qualitative Descriptive | First Nations (Cree) | Women (n=24) |
| 61 | 1981 | Wotton | Retrospective | First Nations (Cree) Métis | Births (n=275) |

While many scholars share this view of policy as a reasonable explanation for evacuation, some have called into question its origins and purpose. Confronted with accounts of significant increases in evacuation long before an official policy was put in place [25–27], they have looked beyond policy to explain the disappearance of remote Indigenous birthing.

Countering the belief that the policies originated in concerns for maternal-infant wellbeing, Jasen [28] identifies governmental pressures for evacuation as stemming from preoccupation with their capability as a civilizing authority. Further evidence of evacuation as a strategy to assimilate and civilize Indigenous people in Canada, is given by Lawford and Giles [29]. Tracing evacuation back to 1892, they demonstrate how the government explicitly used evacuation as a colonial instrument to undermine traditional birth practices and pressure Indigenous communities into accepting the authority of biomedical institutions. The counter narratives offered by these scholars challenge the seemingly benign origins of evacuation policy, and raise important questions about the ongoing effects these origins may have today.

*3.1.2 Institutional coercion*

For historians of maternal evacuation, governmental pressure was critical to ensuring the establishment of evacuation policy [26,30,31]. This pressure, alongside simultaneous advocacy by biomedical authorities in Canada for hospital births [32], generated considerable fear among medical staff working in remote Indigenous communities. The threat of legal repercussions, shortages of trained personnel and the absence of medical back-up during emergencies helped cement providers' beliefs in the danger of remote birthing, and secure their support for evacuation [19,27,32–37].

These sociopolitical forces help explain the accounts of medical providers coercing and threatening women into accepting evacuation [38]. Studies have documented an array of tactics medical personnel use to influence women who resist evacuation, including scaring women with stories of negative perinatal outcomes [27,38], and threatening involvement of local law enforcement [23,37], loss of access to medical care, or monetary fines [23].

*3.1.3 Remoteness*

Like policy, geographical remoteness is another seemingly self-evident explanation for maternal evacuation. Many rural and remote Indigenous communities are only accessible by roads for part of the year, while others are accessed solely by water or air transportation. Scholars point to poor infrastructure, unpredictable weather, and unreliable transportation in case of an emergency as central factors leading to the evacuation of Indigenous women, often well in advance of their expected date of delivery [8,16,39,40]. Although sporadically examined, remoteness cements evacuation as both a pragmatic and inevitable practice.

*3.1.4 Maternal-fetal health status*

Maternal-fetal health complications and risks figure predominantly as reasons for evacuation. Indigenous women are frequently evacuated for complications in pregnancy such as hemorrhage [6,19,20,41–43], hypertensive disorders [6,7,19,20,41–46], and preterm-labour [6,41,44,45,47]. Maternal risk factors also influence evacuation, including a history of previous caesarian section [6,7,43] or low birth weight [46,48], advanced maternal age [20, 41,46], adolescent pregnancy [20,41,45], primiparity [20,21,25–27,30,41,44,45,49], grand multiparity [20,27,30,44] and uncertain gestational age [36,43,50].

Although complex medical conditions and risks of complications are frequently cited as objective and undisputable grounds for evacuation, some scholars question their supposed neutrality [25,27,35] and scientific validity [20,48,49,51,52]. As biomedical authorities strove to

establish control over Indigenous childbirth, several scholars have pointed to the inconsistent manner in which Indigenous women were labelled as 'high-risk' [48], and the steady rise of evacuation rates without parallel changes in formal definitions of obstetrical risk [25–27].

*3.2 Outcomes related to evacuation*

*3.2.1 Maternal-child health impacts*

In contrast to the ample research on maternal-infant health status as *cause* of evacuation, few studies have examined the *impacts* of evacuation on the physical health of Indigenous mothers and children. Although limited in number and scope, those that have, found higher rates of substance use [6,20,27], gang- recruitment into sex work [24], sexually transmitted infections [20], and newborn infections [49]. Moreover, while the alarming rates of maternal and infant mortality have significantly decreased with routine evacuation, some question whether the declining rates can in fact be attributed to the policy of evacuation [48,49,53]. In a decades-long study of perinatal mortality in Nunavut, Rajsigl [48] points to the confounding effect of many social and public health developments such as housing, education and sanitation on perinatal mortality rates. Challenged by small samples, inconsistent collection of perinatal statistics, and confounding effects of large social and infrastructural transformations in northern and remote Indigenous communities [48,53,54], the long-term effects of evacuation on maternal-infant health and its contribution to reducing perinatal health disparities between Indigenous and non-Indigenous populations remain largely unknown. What is known, are the deleterious short-term psychosocial, cultural, and economic effects on evacuated mothers, their families, and communities, as demonstrated below.

*3.2.2 Women's experience of evacuation*

From the first published study of evacuation, researchers have consistently documented alarming levels of emotional distress among Indigenous evacuees. Accounts of loneliness, fear, boredom, and anxiety span over three decades of research among First Nation, Métis and Inuit communities [6,17,21,23,26,27,32,35,37,38, 39,40,47,51,55–62]. Particularly acute among young first-time mothers [37,40,57,60,63], maternal emotional distress associated with evacuation can negatively impact breastfeeding [64] and maternal-infant bonding [23].

While the impacts of evacuation on maternal-infant physical health are limited in the literature, the effects of emotional distress on physical health are strikingly clear to Indigenous evacuees themselves. A young mother describes her experience of evacuation and the impact of stress on her diet:

"Actually I did lose [weight] but I think that was the stress . . . I was eating, but I wasn't eating lots. I just kind of ate to keep myself going. I was just stressed out. I had a lot of anxiety about being there so I lost [weight] in my last month." (p.78 (57)).

Women's distress is also amplified by awareness of its impacts on their unborn children [58]:

"I must have hurted [sic], like hurted my baby, because of my loneliness, and I didn't want to eat. Like I ate at times, but everybody must know how it feels when you are lonely for somebody, and you don't eat. "(p.43)

Above all else, women experienced great distress at being separated from their families, especially their children [16,21,32,33,37,38,41,55,57,60,65,66]. Worry for their children left behind and the loss of supportive family presence irrevocably marred women's experience of childbirth. The dire consequences of the distress are illustrated by a First Nation woman describing the birth of her first child [65]:

"Well, actually I was just crying most of the time . . . It was really hard . . . Like it was supposed to be a happy time in my life, like having my first baby. But it didn't seem that way because I was so lonely." (p. 484)

The numerous stories of loneliness, fear and sadness, however, are interspersed with positive accounts of evacuation. Well- supplied southern cities give women access to affordable necessities for their families such as diapers and clothing [17,37, 63], and specialized health services [17,58]. Women's loneliness is sometimes alleviated by forming friendships with other evacuated women [17,40], or the company of family members living in the city [38]. Some women even express happiness at being evacuated, for the temporary reprieve it provides from childcare and domestic labour [17,63]. These accounts, however, must be contextualised by evidence that positive experiences of evacuation are mediated by short stays in the south [18], the presence of accompanying family members [58], and extensive support for families and children remaining at home [18].

*3.2.3 Financial hardships*

Financial-related stress featured prominently in the studies reviewed. Already burdened by poverty, evacuated women worry about missed wages due to their prolonged absences from work, and job loss as fathers struggle with the demands of childcare and household tasks [23,37,57,60]. Time spent in the South leads many to incur significant debts, as women and escorting family

members struggle to pay for transportation, lodging and meals [37,39]. Even those who are eligible for governmental travel allowance often find it insufficient for adequate accommodation and nutrition while in the South [39].

Limited finances are also the most frequently cited barrier to family presence during evacuation [21,23,37,38,39,47,55–58,60,61,65]. In the context of widespread poverty and erratic governmental funding, families are frequently shut out of the experience of childbirth by the insurmountable costs of travelling and staying in the South. First documented by O'Neil in 1988 [57], inadequate funding for family presence during evacuation remains an ongoing problem three decades later [55,65].

*3.2.4 Family disruption*

The impacts on family wellbeing are among the most poorly examined consequences of maternal evacuation, despite being the most frequently cited sources of distress for evacuated mothers [8,37,40,47,55–58]. Scholars have linked the prolonged absence of mothers to behavioural issues and emotional distress in children who are left behind [27,35,38,47,57,58,67]. Children's anxiety [27,38,57,58], behavioural outbursts [57], and premature discontinuation of breastfeeding [37] prefigure lasting consequences to family wellbeing, including compromised parent-child attachment [33,35,37,52,57] and difficult bonding with the newborn infant [8,23,32,35,37,51]. Concerns have also emerged about possible physical health impacts on children left behind, and those born in the south [35,51].

The compounding effects of evacuation on families are exacerbated by challenges in arranging childcare for children who remain behind. Faced with limited finances and overburdened relatives, families struggle to compensate for mother's prolonged absences [35,37]. Fathers in particular report significant distress as they struggle with worry for their partners in the south, managing household tasks, childrearing, and maintaining their jobs at the same time [21,35,57,58].

The lack of resources and supports for families of evacuees, can contribute to children living in unsafe environments [6,20,27,32,35,39,57,58]. Some families resort to placing children in the care of Child and Family Services because they do not have other means to ensure the care and safety of their children while the mother is awaiting childbirth outside of the community [23,37, 58,60]. Predictably, limited support for families, coupled with the emotional and financial stressors of evacuation, frequently lead to significant tensions and even family break-ups [20,27,35,37, 39,47,68,69].

*3.2.5 Cultural continuity and community wellness*

Evacuation invariably limits family and community participation in childbirth. The absence of family support during evacuation has been directly linked to women's distress, and to their experience of childbirth as alienating and traumatic [8,17,24, 40,47,58,60,65,70]. As Phillips-Beck concluded in her study of evacuation in Berens River First Nation [58]:

> "There was overwhelming agreement among those that left the community and their system of support behind that the experience was marred by negative emotions and symptoms as well as a great deal of internal suffering described in terms of loneliness and tears." (p. 41)

Authors point to the exclusion of family and community from childbirth as a critical consequence of evacuation. Many have documented how the removal of childbirth from the sphere of the family and community has significant impacts on collective wellbeing [8,17,30,33,37,38,47,51,59,60,69]. These include high rates of community-wide depression [39], declines in hunting and consumption of traditional foods [27,57], and disruption of community ties [30,51,60,69]. In Indigenous communities where childbirth is a collective event, evacuation interrupts important social roles. Recalling a time when babies were born at the local community hospital, a Helitsuk women illustrates the impacts of evacuation [38]:

> "There are several aspects of it . . . the celebration has been taken away . . . if a baby was being born there would be at least 50 people in this hospital, waiting. And as soon as the baby was born, people would be on the phone, on the radio, celebrating." (p. 59)

In severing the bonds between community members, evacuation also leads to a breakdown in intergenerational knowledge sharing [30,31,35]. Scholars point to the prohibition of Indigenous midwifery as a critical strategy for disrupting traditional knowledge systems and establishing compliance with evacuation [27,29,33,35,51]. As authority over pregnancy and birth were wrested from Indigenous midwives, the intergenerational trans- mission of knowledge and skills from older to younger women was fractured, with devastating consequences to Indigenous midwifery and women's traditional roles [27,30,31,34,51,57,59]. The impacts of evacuation on undermining elders' authority and wisdom in childbirth are profound:

> "Back then, the women had the knowledge to take care of a woman in labour . . . We were informed by our elders on what to do and what not to do. Today, an older woman complained that she could not even explain what hospital birth was going to be like to a girl with her first pregnancy: It's hard to try and explain what is going to be happening to them in the doctor's

hands because (the older woman) doesn't really know what the doctor is going to be doing or asking them to do." (p.486 in [57]).

In addition to eroding traditional roles and knowledge, evacuation poses a direct assault to Indigenous identities. In many communities, being born on the land is essential in forming one's identity and ties to the collective [8,42]. Research among the Inuit documented a sense of loss of cultural identity, and a collective belief that children born in southern hospitals are somehow different [30,34,51,57]. Few studies have examined the evacuation- related erosion of Indigenous identity outside Inuit communities, but recent research suggest this also happens among First Nation communities [8,23]:

*3.2.6 Engagement with health services*

The negative short-term effects of childbirth evacuation on women also result in low utilization of health services. In an attempt to avoid the stressors and burdens of evacuation, many women resort to hiding their pregnancies or themselves from local medical providers in an effort to delay or prevent evacuation [17– 19,23,27,31,33,35,37]. Others who comply with evacuation will sometimes return home against medical advice out of loneliness
[24] or worry for their children left at home [23,41,56].

Women's resistance to evacuation invariably situates medical personnel, especially nurses, in an adversarial relationship with the women, as they must enforce the policy of evacuation. As Hiebert [23] explains, attempting to evade evacuation not only "undermines the autonomy of the woman and the role of the nurse, as a patient advocate" (p. 212), but can also lead to longer evacuation periods due to uncertain due dates [33,36] or complications arising from unplanned home births [6].

*3.2.7 Self-Determination*

Evacuation repeatedly challenges Indigenous women's embodied sovereignty and self-determination. While some women resist evacuation through outright refusal or evasion [18,21,37,65] most describe feelings of disempowerment and lack of control over their experience of evacuation and childbirth [6,21,24,26,31,33,40, 47,49,51,57,65,67,71]. These feelings stem from lack of information regarding the process of evacuation [24,65], lack of choice in the place of childbirth [21,38], or in the type of care received [ 47,49,51,65,67]. Evacuation fractures pregnancy and childbirth into a series of contestations over women's bodily integrity,

dispossessing them of choice in birth position [21,33,49,50,57], medical interventions [21,47,65,67] and presence of family support [21,49].

Although many studies documented a deep-seated sense of disempowerment and desire for community-based birth [8,21,38,49,58,65], others described instances of women preferring to evacuate [6,7,42,53], frequently motivated by a desire for better care in case of an emergency or complication [8,21,36,37,46,61,63]. While this seemingly logical motivation often goes unquestioned, Kornelsen et al. [38] and Gold et al. [36] trace this preference to women's lack of confidence in local care providers and a general sense that their communities are no longer safe spaces for childbirth. Medicalization of pregnancy and maternal evacuation policies have thus worked in tandem to undermine local knowledge and trust in traditional birthing practices.

*3.2.8 Quality of healthcare services*

Scholars of evacuation occasionally explain the negative social impacts as unfortunate yet inevitable means to securing women's access to quality perinatal care [16,20,44]. They point to the lack of community-based perinatal services as a necessary driver of evacuation, contrasting them with the opulence of technologically advanced southern hospitals. Community-based facilities are often staffed by an inexperienced and rapidly changing workforce [23,27,31,35,47,48,72], frequently lacking resources for even basic prenatal care [27,38,43,46,47,73]. Without midwifery services [19,25,35,42,46], and challenged by unpredictable weather and emergency transport [38,40], medical personnel are left with little choice but to evacuate women. Some scholars worry that such dependence on southern hospitals discourages investment in local perinatal services [27,57]. The benefits of technologically advanced care in the south, however, are increasingly questioned by mounting evidence of the poor quality of care Indigenous women receive during evacuation. Leaving home with little information and preparation, women are challenged by uncomfortable transportation on their long journeys south, and subpar accommodations in unfamiliar and intimidating cities [17,23,24,37,38,39,40,56,58,60]. They are subjected to interventions including episiotomy, narcotic analgesia, and induction of labour [27,35,37], on hospital units that actively discourage family presence [39].

Safe and responsive care is also hindered by language barriers and communication difficulties between women and staff [18,24, 40,55], as well as discrimination and racism that pervades medical institutions [47]. Many Indigenous evacuees describe facing stereotypical and essentialist

assumptions regarding substance use, and scrutiny of their parental capacities [37,47]. These realities have led scholars to question the proposed safety and benefits of maternal evacuation [39,67].

## 4 Discussion

Three insights emerge from mapping the documented and mostly published evidence on maternal evacuation of Indigenous women in Canada. First, the emotional, social and cultural harms associated with evacuation are persistent and pervasive, with surprisingly little variation across time, place, or Indigenous group. Evacuation sets up childbirth as an experience punctuated by loneliness, anxiety and sadness for women who must leave their families and supportive networks behind, instead of being a pivotal moment for healing and breaking the cycle of intergenerational trauma [74]. While local birthing facilities born of strong community mobilization afford some Indigenous mothers the comfort of birthing at home [49,70], for a majority of evacuated women pregnancy and childbirth remains an alienating and traumatic experience.

Evacuating women also leaves family management gaps that must be held together by family members who remain in the community. With limited supports, families struggle with child- care challenges, financial burdens, and the emotional and physical health consequences to children separated from their mothers. These accumulated stressors can in turn compromise parent-child bonding, and lead to family tensions and break-ups. Although adverse impacts on women and families have been well documented, scholars have yet to examine their intergenerational impacts, especially their role in intergenerational trauma and stress proliferation [75]. Given the history of residential schools and the Sixties Scoop, there is a critical need to examine the accounts of state apprehension of children in the context of evacuation (for a detailed analysis of Indigenous child welfare in Canada see Bennet et al. 2005 [76].

The second insight relates to the stated objective of evacuation improving maternal and infant health. With the weight of its adverse impacts on women, families and communities, paradoxically evacuation seems to defeat this goal. Examining the colonial origins of evacuation highlights the legacy of dispossession of Indigenous bodies, knowledge and land, and the consequences of this dispossession. Evacuation repeatedly assaults Indigenous women's embodiment and sovereignty, depriving them of fundamental rights in childbirth. Those who are willing to assert their desires in childbirth must stand against governmental and medical authorities, risking coercion and policing.

Evacuation also disembodies Indigenous women by transferring social, political, historical and geographical risks onto their bodies. Although remoteness, unpredictable weather, deficient infrastructure and inadequate medical services are frequently cited causes of evacuation, scholars have yet to examine how these factors are transposed onto Indigenous women's bodies as risks that they must bear. As Smith-Oka points out, reproductive risk is disproportionally attributed to poor and racialized women, who must assume responsibility for assuring a favourable birth in contexts where they have little control [77]. The definition, distribution and management of reproductive risk among Indigenous women needs to be further examined.

Removing childbirth from the land also fractures the ability of Indigenous children to inherit. It deprives children of land-based connections critical to their Indigenous identities, and of knowledge passed on by their elders. Nowhere are the impacts of dispossession more profound than among Indigenous women who have lost, or are at risk of losing their knowledge and legacy of Indigenous midwifery, motherhood, pregnancy, and land-based birth. According to Leanne Betasamosake Simpson, dispossession under settler colonialism uniquely impacts Indigenous women due to its patriarchal origins [78]. The ways in which evacuation disproportionately dispossess and disciplines women seems to support this view.

Finally, evacuation continues in the face of decades of evidence on its associated emotional, social and cultural harms, with little examination of its consequences to Indigenous maternal-infant health. The limited evidence on the benefits of evacuation is outdated and plagued by numerous socio-political and methodological confounders. In light the ample evidence on the negative impacts of perinatal stress on maternal-infant health [79,80], examining the health impacts of evacuation on Indigenous women and children is crucial. To our knowledge, no empirical evidence exists about the long-term impacts of evacuation on the health of Indigenous women and children. We also regard the limited research on evacuation among Métis communities as a critical knowledge gap.

## 5 Limitations

It is important to contextualise the findings of this review over time. As previously noted, evacuation practices have varied across place and transformed over time, making extended analyses of maternal evacuation more complex. As material, cultural, political and social conditions of remote Indigenous communities have changed, so have their experiences of evacuation. The survival of local birth in a community's living memory, technological

advancements in communication and transportation, the recovery of traditional Indigenous midwifery, changing land agreements and treaties, all shape local realities and experiences of maternal evacuation. Local land-based analyses should therefore be carefully considered alongside persistent narratives of social, cultural and emotional harms that appear to withstand the test of time.

We only considered studies in English, leaving out potentially relevant publications in French. Our study was restricted to Canada. A broader concern about evacuation would also consider other countries where maternal evacuation of Indigenous population is an issue, such as Australia, New Zealand, and the United States. We did not conduct a quality appraisal of the included publications. The scoping review covers only written knowledge, mostly published in the non-Indigenous media. It does not include unwritten knowledge, some of which predates written knowledge. Synthesis of written and unwritten knowledge is the subject of a separate exercise. Finally, given that the reviewers are non- Indigenous, it is possible that some factors and outcomes related to evacuation were missed as a result of different cultural stand- points, perspectives and knowledges.

## 6 Conclusion

Even based exclusively on the written and mostly published evidence, evacuating rural and remote Indigenous women for childbirth is fraught with challenges. The colonial origins of the practice persist to this day, shaping contemporary maternal-infant care of Indigenous women in Canada. Despite the most well- intentioned medical staff and institutional policies, evacuation frequently causes considerable distress and harm to Indigenous families and communities, cultivating a sense of loss, disempowerment and alienation throughout one of the most profound human experiences. Mapping the evidence on maternal evacuation makes clear the need to re-think how we support Indigenous maternal-infant health and wellness in pregnancy and childbirth. This has implications for both research and policy. Critical knowledge gaps like those found in Métis communities should be bridged. The formal integration of Indigenous stakeholders' perspectives with the published evidence using participatory methods such as the Weight of Evidence method [81], and a systematic assessment of the methodological quality of the studies reviewed here are important precursors to clinical and policy changes. Moreover, such changes should be grounded in local contexts and informed by collaborative Indigenous-settler relationships. The question posed by Leanne Simpson [77] can help us on our path forward: How do we ensure every Indigenous body, honored and sacred, knows respect in their bones? (p.51)

**Author contributions**

HS, JPP and IS conducted the data extraction, analysis, and manuscript write-up. RB, AC, ZMV and NA assisted in data analysis and manuscript write-up.

**Ethical statement**

The research project received ethical approval by the McGil University Faculty of Medicine IRB.

**Conflict of Interest Statement**

The authors declare that they have no competing interests.

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**References**

1) Z.-C. Luo, R. Wilkins, M. Heaman, J. Smylie, P.J. Martens, N.G.L. McHugh, et al., Birth outcomes and infant mortality among First Nations Inuit, and non- Indigenous women by northern versus southern residence, Quebec, J. Epidemiol. Community Health (1979-) 66 (4) (2012) 328–333.

2) N. Auger, A.L. Park, H. Zoungrana, Ml F. Sing, E. Lo, Z.-C. Luo, Widening inequality in extreme macrosomia between Indigenous and non-Indigenous populations of Que'bec, Canada, Aust. N. Z. J. Public Health 37 (1) (2013) 58–62.

3) C. Bourassa, K. McKay-McNabb, M. Hampton, Racism, sexism and colonialism: the impact on the health of Aboriginal women in Canada, Can. Woman Studies 24 (1) (2004).

4) S. Canada, Focus on Geography Series, Census. Statistics Canada Catalogue no. 98-404-X2016001 Ottawa, Ontario2017 [cited 2020 August] Available from:, (2016) . https://www12.statcan.gc.ca/census-recensement/2016/as-sa/fogs- spg/Facts-CAN-eng.cfm?Lang=Eng&GK=CAN&GC=01&TOPIC=9.

5) V.K. Douglas, Childbirth among the Canadian Inuit: a review of the clinical and cultural literature, Int. J. Circumpolar Health 65 (2) (2006) 117–132.

6) V. Van Wagner, B. Epoo, J. Nastapoka, E. Harney, Reclaiming birth, health, and community: midwifery in the Inuit villages of Nunavik, Canada, J. Midwifery Womens Health 52 (4) (2007) 384–391 PubMed PMID: 106151142. Language: English. Entry Date: 20070914. Revision Date: 20170802. Publication Type: Journal Article.

7) V. Van Wagner, C. Osepchook, E. Harney, C. Crosbie, M. Tulugak, Remote midwifery in Nunavik, Quebec, Canada: outcomes of perinatal care for the Inuulitsivik health centre, 2000-2007, Birth 39 (3) (2012) 230–237, doi:http:// dx.doi.org/10.1111/j.1523-536X.2012.00552.x PubMed PMID: 23281905.

8) J. Kornelsen, A. Kotaska, P. Waterfall, L. Willie, D. Wilson, The geography of belonging: the experience of birthing at home for First Nations women, Health Place 16 (4) (2010) 638–645.

9) Z. Munn, M.D. Peters, C. Stern, C. Tufanaru, A. McArthur, E. Aromataris, Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach, BMC Med. Res. Methodol. 18 (1) (2018) 143.

10) H. Arksey, L. O'Malley, Scoping studies: towards a methodological framework, Int. J. Soc. Res. Methodol. 8 (1) (2005) 19–32.

11) D. Levac, H. Colquhoun, K.K. O'Brien, Scoping studies: advancing the methodology, Implement. Sci. 5 (1) (2010) 69.

12) M.D.J. Peters, C. Godfrey, P. McInerney, Z. Munn, A.C. Tricco, H. Khalil, Chapter 11: Scoping reviews (2020 version), in: E. Aromataris, Z. Munn (Eds.), JBI Manual for Evidence Synthesis, JBI, 2020, doi:http://dx.doi.org/10.46658/ JBIMES-20-12. Available from https://synthesismanual.jbi.global.

13) A.C. Tricco, E. Lillie, W. Zarin, K.K. O'Brien, H. Colquhoun, D. Levac, et al., PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explana- tion, Ann. Intern. Med. 169 (7) (2018) 467–473.

14) V. Braun, V. Clarke, Successful Qualitative Research: a Practical Guide for Beginners., SAGE, London, 2013.

15) T. James, H. Angela, Methods for the thematic synthesis of qualitative research in systematic reviews, BMC Med. Res. Methodol. [Internet] 8 (1) (2008) 45.

16) B. Binns, Obstetric care for northern women, Arctic Med. Res. 2 (3) (1990) 79–84.

17) A. Tourigny, J. Ross, P. Joubert, An Evaluation of Perinatal Care and Services in the Hudson Bay Region, The organization: DSC-CHUL, 1991.

18) C. Earnshaw, Obstetrical Care in the Baffin Region, Northwest Territories: Geographical, Medical and Cultural Perspectives, National Library of Canada, Ottawa, 1997.

19) M.L. Stevenson, The provision of maternity services in northern Labrador 1984-1986, Arctic Med. Res. 47 (Suppl 1) (1988) 492–494.

20) D.W. Spady, Between Two Worlds: the Report of the Northwest Territories Perinatal and Infant Mortality and Morbidity Study, Boreal Institute for Northern Studies, University of Alberta, Edmonton, Alta., Canada, 1982.

21) M. Chamberlain, K. Barclay, Psychosocial costs of transferring indigenous women from their community for birth, Midwifery 16 (2) (2000) 116–122.

22) J. O'Neil, P.A. Kaufert, The Politics of Obstetric Care: the Inuit Experience. Births and Power, Routledge, 1990, pp. 53–68.

23) S. Hiebert, NCN Otinawasuwuk (receivers of Children): Taking Control of Birth in Nisichawayasihk Cree Nation, University of Manitoba, Winnipeg, Manitoba, 2003.

24) K.M. Lawford, I.L. Bourgeault, A.R. Giles, "This policy sucks and it's stupid:" Mapping maternity care for First Nations women on reserves in Manitoba, Canada, Health Care Women Int. 40 (12) (2019) 1302–1335, doi:http://dx.doi. org/10.1080/07399332.2019.1639706.

25) P.A. Kaufert, E. Bowden, J. O'Neil, B. Postl, M.E. Moffatt, R. Brown, The delivery of prenatal care to women from the Keewatin: 1979-85, Arctic Med. Res. (Suppl) (1991) 577–580.

26) P.A. Kaufert, J.D. O'Neil, Cooptation and control: the reconstruction of Inuit birth, Med. Anthropol. Q. 4 (4) (1990) 427–442.

27) B.A. Daviss-Putt, Rights of passage in the North: from evacuation to the birth of a culture, in: M. Crnkovich (Ed.), "Gossip": a Spoken History of Women in the North, Canadian Arctic Resources Committee, Ottawa, Ontario, 1990, pp. 91.

28) P. Jasen, Race, culture, and the colonization of childbirth in Northern Canada, Soc. Hist. Med. 10 (3) (1997) 383–400.

29) K. Lawford, A. Giles, Marginalization and coercion: Canada's evacuation policy for pregnant First Nations women who live on reserves in rural and remote regions, Pimatisiwin. 10 (3) (2012) 327–340.

30) J. O'Neil, P. Kaufert, The politics of obstetric care: the Inuit experience, in: W.P. Handwerker (Ed.), Births and Power: Social Change and the Politics of Reproduction, Westview Press, Boulder, 1990.

31) P. Kaufert, J. O'Neil, Analysis of a dialogue on risks in childbirth: clinicians, epidemiologists and Inuit women, in: S. Lindenbaum, M.M. Lock (Eds.), Knowledge, Power, and Practice: the Anthropology of Medicine and Everyday Life, University of California Press, Berkeley, 1993, pp. 32–54.

32) J.I. England, Rankin Inlet Birthing Project: outcome of primipara deliveries, Int.J. Circumpolar Health 57 (Suppl 1) (1998) 113–115.

33) L. Paulette, The Changing Experience of Childbirth in the Western NWT. Childbirth in the Canadian North: Epidemiological, Clinical Cultural Perspec- tives, University of Manitoba Northern Health Research Unit, Winnipeg, Manitoba, 1990, pp. 45–50.

34) B.A. Daviss, Heeding warnings from the Canary, the whale, and the Inuit, in: R. Davis-Floyd, C.F. Sargent (Eds.), Childbirth and Authoritative Knowledge: Cross-Cultural Perspectives, University of California Press, Berkeley, 1997, pp. 441.

35) L. Paulette, The family centered maternity care project, in: M. Crnkovich (Ed.), "Gossip": a Spoken History of Women in the North, Canadian Arctic Resources Committee, Ottawa, Ontario, 1990, pp. 71–87.

36) S.T. Gold, J. O'Neil, V. Van Wagner, The community as provider: collaboration and community ownership in Northern maternity care, Can. J. Midwifery Res. Pract. 6 (2) (2007) 5–17.

37) A. Struthers, S. Winters, C.J. Metge, Understanding the Strengths and Needs of Women Who Temporarily Relocate to Winnipeg for Birth: an Action Research Study Winnipeg, Manitoba, (2014) .

38) J. Kornelsen, A. Kotaska, P. Waterfall, L. Willie, D. Wilson, Alienation and resilience: the dynamics of birth outside their community for rural First Nations women, Int. J. Indig. Health 7 (1) (2011) 55.

39) H. Brown, C. Varcoe, B. Calam, The birthing experiences of rural Aboriginal women in context: implications for nursing, Can. J. Nurs. Res. 43 (4) (2011) 100–117.

40) L. Guse, Canada. Health Manpower D, University of Manitoba. Department of A. Maternal Evacuation: a Study of the Experiences of Northern Manitoba Native Women, Dept. of Anthropology, University College, University of Manitoba, Winnipeg, MB, 1982.

41) T.F. Baskett, Obstetric care in the central Canadian Arctic, Br. Med. J. 2 (6143) (1978) 1001–1004 PubMed PMID: 709174.

42) S. Houd, J. Qinuajuak, B. Epoo, The outcome of perinatal care in Inukjuak, Nunavik, Canada 1998-2002, Int. J. Circumpolar Health 63 (Suppl 2) (2004) 239–241 PubMed PMID: 15736659.

43) K. Wotton, Obstetrical Care in a Northern Indian Community, Circumpolar Health 81: Proceedings of 5th International Symposium on Circumpolar Health; August 1981, Copenhagen. Oulu, Finland: Nordic Council for Arctic Medical Research, 1981, pp. 118–121.

44) Obstetrical emergencies in the Canadian arctic, in: T. Baskett, R. Bradford, J. Hildes (Eds.), Circumpolar Health 81: Proceedings of 5th International Symposium on Circumpolar Health, Copenhagen, 9-13 August 1981, Nordic Council for Arctic Medical Research, 1982.

45) S. Chatwood-Affleck, A. Lippman, L. Joseph, G. Pekeles, Indications for transfer for childbirth in Inuit women at the Innuulisivik Maternity, Int. J. Circumpolar Health 57 (1998) 121–126.

46) G. Carignan, Universite' Laval, Centre Hospitalier. De'partement De sante' Communautaire. Projet N. Pregnancies and Births Among the Inuit Population of Hudson Bay, 1989-91, Projet Nord, University of Laval Hospital Centre, Sainte-Foy, Quebec, 1993.

47) P. Bird, Exploring Models for Quality Maternity Care in First Nations and Inuit Communities: a Preliminary Needs Assessment: Final Report of Inuit Women's Needs Assessment Available from:, Ajunnginiq Centre, National Aboriginal Health Organization, Ottawa, Ont, 2006. https://www.deslibris.ca/ID/205421.

48) D. Rajsigl, An Investigation Into Infant Mortality and the Health Care System in the Eastern Arctic Toronto, York University, Ontario, 1985.

49) N. Tookalak, A. Qumaluk, L. Qinuajuak, Inuit midwives: their stories, Midwifery Today Childbirth Educ. (40) (1996) 54–55.

50) E.S. Sennett, G.E. Dougherty, Evacuation for childbirth in the Baffin Region, N. W.T.: factors associated with the length of family separation, Arctic Med. Res. (Suppl) (1991) 601–604.

51) Pauktuutit, Special report on traditional midwifery. Pauktuutit Inuit Women's Association of Canada, Suvaguuq 10 (1) (1995) 12.

52) A.I. Murdock, Factors associated with high-risk pregnancies in Canadian Inuit, Can. Med. Assoc. J. 120 (3) (1979) 291–294.

53) E. Robinson, Maternal health and obstetrical services: measuring health status and the quality of care in remote areas, Arctic Med. Res. (Suppl) (1991) 596– 600.

54) P. Kaufert, M. Moffatt, J.D. O'Neil, B. Postl, The epidemiology of obstetric care in the Keewatin District: methodological issues, in: J.D. O'Neil, P. Gilbert (Eds.), Childbirth in the Canadian North: Epidemiological, Clinical and Cultural Perspectives, Northern Health Research Unit, University of Manitoba, Winnipeg, Manitoba, 1990, pp. 90.

55) Z.M. Vang, R. Gagnon, T. Lee, V. Jimenez, A. Navickas, J. Pelletier, et al., Interactions between indigenous women awaiting childbirth away from home and their southern, non-indigenous health care providers, Qual. Health Res. 28 (12) (2018) 1858–1870, doi:http://dx.doi.org/10.1177/1049732318792500.

56) J. Kornelsen, S. Grzybowski, The costs of separation: the birth experiences of women in isolated and remote communities in British Columbia, Can. Woman Studies 24 (1) (2004) 75–80.

57) J. O'Neil, P. Kaufert, P. Brown, E. Voisey, M. Moffart, B. Postl, et al., Inuit concerns about obstetric policy in the Keewatin region NWT, Arctic Med. Res. 47 (Suppl. 1) (1988) 485–489.

58) W. Phillips-Beck, Development of a Framework of Improved Childbirth Care for First Nation Women in Manitoba: a First Nation Family Centred Approach, University of Manitoba, Winnipeg, Manitoba, 2010.

59) L. Qinuajuak, Birth Is a Normal Part of Life. Midwifery Today: Childbirth Education, (1996) , pp. 1 40.

60) J. Cidro, E. Dolin, C. Queskekapow, Bored broke and alone: experiences of pregnant and expectant first nations mothers birthing in and out of the Community, in: H. Tait Neufeld, J. Cidro

(Eds.), Indigenous Experiences of Pregnancy and Birth, Demeter Press, Bradford, Ontario, 2017, pp. 73–90.

61) T. O'Driscoll, L. Kelly, L. Payne, N. St Pierre-Hansen, H. Cromarty, B. Minty, et al., Delivering away from home: the perinatal experiences of First Nations Women in Northwestern Ontario, Can. J. Rural Med. 16 (4) (2011) 126–130.

62) L. Dawson, Birth places, embodied spaces, in: H. Tait Neufeld, J. Cidro (Eds.), Indigenous Experiences of Pregnancy and Birth, Demeter Press, Bradford, Ontario, 2017, pp. 144–162.

63) G. Webber, R. Wilson, Childbirth in the north. A qualitative study in the Moose Factory zone, Can. Fam. Phys. 39 (1993) 781–788.

64) R. Eni, W. Phillips-Beck, P. Mehta, At the edges of embodiment: determinants of breastfeeding for first Nations women, Breastfeed. Med. 9 (4) (2014) 203–214, doi:http://dx.doi.org/10.1089/bfm.2013.0129 PubMed PMID: 24606065.

65) K.M. Lawford, A.R. Giles, I.L. Bourgeault, Canada's evacuation policy for pregnant First Nations women: resignation, resilience, and resistance, J. Women Birth 31 (6) (2018) 479–488.

66) E. Robinson, Pregnancies, deliveries, and perinatal mortality in the James Bay Area, Quebec, 1975-1984, in: J. O'Neil, P. Gilbert (Eds.), Childbirth in the Canadian North: Epidemiological, Clinical, Cultural Perspectives Winnipeg, Northern Health Research Unit, University of Manitoba, Manitoba, 1990, pp. 13–15.

67) R. Olson, Bearing witness: rural indigenous women's experiences of childbirth in an urban hospital, in: H. Tait Neufeld, J. Cidro (Eds.), Indigenous Experiences of Pregnancy and Birth, Demeter Press, Bradford, Ontario, 2017, pp. 91–110.

68) P. Lessard, D. Kinloch, Northern obstetrics: a 5-year review of delivery among Inuit women, CMAJ 137 (11) (1987) 1017–1021.

69) NAHO, Me'tis Maternal and Child Health: a Discussion Paper Available from:, National Aboriginal Health Organization, Ottawa, Ontario, 2011. https://www. deslibris.ca/ID/230146.

70) J. Stonier, The Innulitsivik Maternity. Childbirth in the Canadian North: Epidemiological, Clinical, Cultural Perspectives, Northern Health Research Unit, Winnipeg, Manitoba, 1990, pp. 61–74.

71) M. Chamberlain, R. Nair, C. Nimrod, A. Moyer, J. England, Evaluation of a midwifery birthing center in the Canadian north, Int. J. Circumpolar Health 57 (Suppl 1) (1998) 116–120.

72) D. Be'langer, J. Gagne', F.O. Meyer, Evaluation of Perinatal Care and Services, Hudson Bay and Ungava Bay: Epidemiological Phase: Pregnancies and Births in Two Inuit Populations of Northern Que'bec, Dept. of Community Health, Centre hospitalier de l'Universite' Laval, Que'bec, Canada, 1991.

73) F. Bouchard, Having a baby in northern Quebec. Lessons for the future, Arctic Med. Res. 47 (Suppl 1) (1988) 495–497.

74) A. Roy, Intergenerational trauma and Aboriginal women: implications for mental health during pregnancy, First Peoples Child Fam. Rev. 9 (1) (2014) 7–21.

75) A. Bombay, K. Matheson, H. Anisman, The intergenerational effects of Indian Residential Schools: implications for the concept of historical trauma, Transcult. Psychiatry 51 (3) (2014) 320–338.

76) M. Bennett, C. Blackstock, R. De La Ronde, C. First Nations, Family Caring Society of C, Centre of Excellence for Child W. A Literature Review and Annotated Bibliography on Aspects of Aboriginal Child Welfare in Canada, First Nations Child & Family Caring Society of Canada, Ottawa, Ontario, 2005.

77) V. Smith-Oka, Bodies of risk: constructing motherhood in a Mexican public hospital, Soc. Sci. Med. 75 (12) (2012) 2275–2282, doi:http://dx.doi.org/ 10.1016/j.socscimed.2012.08.029.

78) L.B. Simpson, As We Have Always Done: Indigenous Freedom Through Radical Resistance Available from:, University of Minnesota Press, Minneapolis, 2017. https://www.jstor.org/stable/10.5749/j.ctt1pwt77c.

79) E.J. Mulder, P.G. Robles de Medina, A.C. Huizink, B.R. Van den Bergh, J.K. Buitelaar, G.H. Visser, Prenatal maternal stress: effects on pregnancy and the (unborn) child, Early Hum. Dev. 70 (1–2) (2002) 3–14.

80) S.H. Goodman, M.H. Rouse, A.M. Connell, M.R. Broth, C.M. Hall, D. Heyward, Maternal depression and child psychopathology: a meta-analytic review, Clin. Child Fam. Psychol. Rev. 14 (1) (2011) 1–27.

81) A. Dion, L. Joseph, V. Jimenez, et al., Grounding evidence in experience to support people-centered health services, Int. J. Public Health 64 (5) (2019) 797–802, doi:http://dx.doi.org/10.1007/s00038-018-1180-9

# Chapter 3: Inuit culturally safe birth in the context of childbirth evacuation

**Bridging Statement**

The scoping review illustrated numerous, compounding, and longstanding challenges and adverse impacts associated with Indigenous childbirth evacuation in Canada. Advocating for culturally safe re-design of childbirth evacuation services, the scoping review emphasized the need to ground service changes in local perspectives, using collaborative Indigenous-settler partnerships as the foundation for change. The next chapter of my thesis focuses on childbirth evacuation among Inuit from Nunavik. Using fuzzy cognitive mapping, I engaged Inuit families evacuated for childbirth and their Montreal-based service providers to find local solutions to the problems identified in the scoping review. Engaging stakeholders in naming the challenges and visioning the solutions, I endeavored to answer research question 2 of my thesis: *What does giving birth in a good way in the context of evacuation to Montreal mean for Inuit and their perinatal service providers?*

Chapter 3 of my thesis presents the results of fuzzy cognitive mapping (FCM) with 8 Inuit evacuees and 24 Montreal-based perinatal service providers conducted in 2021. The choice to recruit Inuit participants during their evacuation experience brought advantages and disadvantages. On one hand, engaging Inuit during their experience of evacuation contributed a clarity and depth to their visions of giving birth in a good way. On the other, as illustrated in the scoping review, the experience of childbirth evacuation can be immensely stressful and overwhelming for evacuees, especially for those who are unaccompanied. Many of the participants in the study were transferred for medically high-risk conditions or very near their due dates, which combined with the physical and psychological stressors of evacuation, made recruitment challenging. Anticipating recruitment challenges, subsequent fieldwork in Nunavik in 2023 addressed the imbalance in Inuit-provider representation, with an additional 8 mapping sessions with Inuit that echoed the findings from the Montreal fieldwork.

To recruit and engage service providers in the re-design of childbirth evacuation services for Inuit families transferred to the McGill University Health Centre (MUHC), the scoping review's evidence base set the foundation for local stakeholder engagement. I conducted a series of in-service presentations for clinical staff on the findings of the review, culminating in an obstetrical

grand rounds presentation for all staff at the Women's Health Mission (WHM) of the MUHC. These presentations facilitated lively and at times heated conversations, mobilizing staff to reflect on current services for Indigenous evacuees and their associated impacts. Engaging staff from the outset through evidence socialization likely contributed to the high levels of participation and enthusiasm in the FCM sessions – a notable fact given that the mapping sessions took place at the height of the COVID-19 pandemic.

As scholars of cultural safety note time and again, what is culturally (un)safe is defined by those belonging to the culture in question (41, 44). As such, engaging non-Inuit medical providers in a discussion about culturally safe Inuit birth can be regarded as unproductive or even problematic. Indeed, including the perspectives of powerful and highly privileged service providers within a medical establishment rooted in colonialism and anti-Indigenous racism to participate in re-visioning Inuit childbirth evacuation is challenging. I propose that their engagement, when done using FCM was constructive for several reasons.

By using relatively culturally neutral spatial language/reasoning to depict causal knowledge, FCM is well-suited to comparing and/or combining different perspectives (1, 2, 80). Pattern matching tables depicting Inuit and service providers' views side by side helped bring into focus shared priorities and shed light on diverging perspectives, identifying directions for action. Shared priorities oriented towards actionable items with high likelihood of stakeholder engagement, sustained motivation, and rapid turn-around. Diverging perspectives surfaced potential knowledge and/or cultural gaps on the part of service providers; gaps that must necessarily be bridged to secure meaningful changes in health service re-design for Inuit.

Furthermore, engaging medical providers through FCM offered them an opportunity to reflect on their roles within the medical establishment, and their responsibilities to ensure a culturally safer birth experience for Inuit in the context of evacuation. The question "what do Inuit families need in order to give birth in a good way in Montreal?" guided them to evaluate their "stake" in the issue - to re-imagine themselves as part of the solution to a longstanding practice fraught with harm. Lastly, mapping with service providers across the WHM of the MUHC helped to identify local champions for future implementation of participants' recommendations described in Chapter 4.

**Giving birth in a good way when it must take place away from home: Participatory research into visions of Inuit families and their Montreal-based medical providers (Manuscript 2)**

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Hilah Silver RN, BScN, PhD (candidate)[1] | Sophie Tukalak BA (candidate)[2,3] |
Iván Sarmiento PhD[1,4] | Richard Budgell MA[1] | Anne Cockcroft MB, BS, MD[1] |
Zoua M. Vang PhD[5] | Neil Andersson MD, PhD[1,6]

[1]*Department of Family Medicine, McGill University, Montréal, Québec, Canada*
[2]*McGill University Health Centre Research Institute, Montréal, Québec, Canada*
[3]*Indigenous Maternal Infant Health & Well-being (IMIHW) Lab, McGill University, Montréal, Québec, Canada*
[4]*Escuela de Medicina y Ciencias de la Salud, Universidad del Rosario, Bogotá, Colombia*
[5]*Department of Sociology, McGill University, Montréal, Québec, Canada*
[6]*Centro de Investigación de Enfermedades Tropicales – CIET, Universidad Autónoma de Guerrero, Acapulco, Mexico*

**Abstract**

**Background:** Transferring pregnant women out of their communities for child- birth continues to affect Inuit women living in Nunavik—Inuit territory in Northern Quebec. With estimates of maternal evacuation rates in the region be- tween 14% and 33%, we examine how to support culturally safe birth for Inuit families when birth must take place away from home.

**Methods:** A participatory research approach explored perceptions of Inuit fami lies and their perinatal healthcare providers in Montreal for culturally safe birth, or "birth in a good way" in the context of evacuation, using fuzzy cognitive mapping. We used thematic analysis, fuzzy transitive closure, and an application of Harris' discourse analysis to analyze the maps and synthesize the findings into policy and practice recommendations.

**Results:** Eighteen maps authored by 8 Inuit and 24 service providers in Montreal generated 17 recommendations related to culturally safe birth in the context of evacuation. Family presence, financial assistance, patient and family engagement, and staff training featured prominently in participant visions. Participants also highlighted the need for culturally adapted services, with provision of traditional foods and the presence of Inuit perinatal care

providers. Stakeholder engagement in the research resulted in dissemination of the findings to Inuit national organizations and implementation of several immediate improvements in the cultural safety of flyout births to Montreal.

**Conclusions:** The findings point toward the need for culturally adapted, family- centered, and Inuit-led services to support birth that is as culturally safe as possible when evacuation is indicated. Application of these recommendations has the potential to benefit Inuit maternal, infant, and family wellness.

**KEYWORDS**

childbirth, cultural safety, indigenous, participatory research, women's health

## 1. Introduction

Access to family-centered perinatal healthcare is an ongoing challenge for Indigenous families living in rural and remote communities in Canada.[1] Evacuation for childbirth—the practice of transferring pregnant women out of their communities for birth—is the reality for many, and not always because of obstetric indications. Separating women from their families for weeks or even months, maternal evacuation significantly affects women in Inuit Nunangat, the Arctic homeland of Inuit in Canada. In Nunavik, the Inuit territory in Northern Quebec, 14%–33% of pregnant Inuit women are evacuated to Montreal for childbirth.[2] In Nunavik, women with medically low-risk pregnancies can choose to birth in local maternities—midwife- run birth centers staffed by Inuit and non-Inuit midwives. This contrasts with elsewhere in Inuit Nunangat, where in some communities 100% of births, regardless of the medical risk of the pregnancy, are transferred outside the communities in the absence of local birthing facilities.[3]

While facilitating access to perinatal care, evacuation comes at a well-known cost. Research spanning five decades documents wide-ranging negative impacts of evacuation on mothers, their families, and communities.[3] To our knowledge, prior research has yet to map and operationalize alternative perinatal service models grounded in Inuit needs and visions. In this article, we document the visions of culturally safe birth put forward by Inuit families and their Qallunaat (non-Inuit) perinatal providers in Montreal. The findings presented here are part of a longitudinal participatory project to support community-based childbirth in Nunavik and culturally safe birth—giving birth in a good way—for families who must be transferred to Montreal.

## 2. Methods

*2.1 Research setting*

Health services in Nunavik are divided between the Hudson and Ungava coasts, with small health centers in communities ranging from populations of 200 to 2700.[4] On the Hudson coast, pregnant women have access to a community hospital in Puvirnituq and three maternities in Puvirnituq, Inukjuak, and Salluit.[2] Services for women on the Ungava coast includes a community hospital and maternity in Kuujjuaq. Indeed, the availability of Inuit-led midwifery services in Nunavik is unique. In other regions of Inuit Nunangat where Inuit-led midwifery is limited or nonexistent, all pregnant women irrespective of the medical risk of the pregnancy, are evacuated outside their communities to southern hospitals for childbirth. By contrast, in Nunavik, it is mainly women with medically high-risk pregnancies who are transferred to a tertiary hospital in Montreal.[2] A local accommodation center houses them along with other Inuit patients accessing medical services. In addition to housing, the accommodation center also offers transportation, in-house medical liaisons (e.g., nurses), and interpretation services (D. Lefebvre, personal communication, March 2019).

*2.2 Study participants*

Between April and November 2021, we used purposive sampling to recruit Inuit families staying at the accommodation center and perinatal providers working at the center and hospital. The researchers recruited four Inuit women evacuated to Montreal and their medical escorts, one woman and three men. The women participants ranged in age from 18 to 45 years, two of them about to give birth to their first child. One woman had previously given birth at her local birthing center in Nunavik, and another had experienced childbirth mid-flight in the air ambulance during a previous evacuation. There was a wide range in gestational age: 15–40 weeks. All three Inuit male participants were younger than 35 years of age. The participants' length of stay in Montreal ranged from several days to 2 months at the time of the study.

We also recruited 24 nurses, physicians, midwives, and medical residents working at the accommodation center and the tertiary care hospital's antenatal clinic, birthing center, and antepartum or postpartum units.

*2.3 Fuzzy cognitive mapping*

Participants shared their visions of giving birth in a good way through fuzzy cognitive mapping (FCM).[5] This uses graphs to represent concepts (nodes) linked through causal relationships (arrows). The maps identify concepts impacting an issue and the causal links between them. Maps can use weights to describe different levels of influence of each cause on the corresponding outcome.[6] FCM's accessible and relatively universal principles have facilitated participatory research among First Nations[7] and Inuit[8] in Canada, and marginalized communities in Mexico,[9] Uganda[10] and Nigeria.[11]

*2.4 Drawing the maps*

The question "what do Inuit families need to give birth in a good way in Montreal?" guided the mapping sessions. We invited families and providers to create maps to answer the guiding question and identify their priority action areas. The lead author (HS) and an Inuk researcher (ST) facilitated mapping sessions in English and Inuktitut. Guided by participants, facilitators drew the concepts and arrows mentioned by participants on a whiteboard. In groups of one to four participants, Inuit made five maps and providers 13 maps. We employed conventional numerical weighting with providers to identify the perceived strength of causal relationships in the map using a scale of one for the weakest to five for the strongest. Previous mapping in Nunavik demonstrated that weighting limited communication with Inuit participants.[8] Therefore, for Inuit participants we opted for weighting based on Harris' discourse analysis. This operator-independent method assesses the weight of relationships repeated across multiple unweighted maps.[12] A useful method in intercultural contexts unsuited to participant-weighting, this adaptation of the original approach to discourse analysis derives structural meaning from the frequency of discourse elements: the more frequently a causal relationship is mentioned by participants, the stronger its causal meaning will be.[13]

*2.5 Analyzing the maps*

We digitized hand-drawn maps using the software yEd.[14] In each unweighted map we assigned a value of one where a relationship between two concepts was present, and a value of zero when absent. We then used fuzzy transitive closure on each map to calculate the net influence each concept had on all other concepts either through direct or indirect relationships.[15] Transitive closure transforms a map into a network, with each relationship conditioned by surrounding relationships, and assumes that an indirect relationship between two concepts is only as strong as the weakest weight on the path between them.

To facilitate the comparison of maps between participant groups, we used inductive thematic analysis to condense concepts into categories.[16] We calculated the cumulative weight for each category-level relationship by summing the weights derived from fuzzy transitive closure on the concept-level relationship and then dividing all category-level weights by the maximum value. A weight of one indicates the strongest relationship and weights closer to zero indicate weaker relationships. We calculated out-degree and in-degree centrality scores to determine the most important causal factors and outcomes in each map, respectively.[17]

We used the categories and weights to construct a final reduced category map for Inuit participants and one for providers that included cumulative net influences ≥0.20. We validated the standardized maps through member-checking sessions with three Inuit and three care providers.

TABLE 1 Pattern matching table of recommendations for giving birth in a good way by Inuit and their medical providers.

| Category | Inuit | Providers |
|---|---|---|
| Feeling safe & at home | 1.00* | 0.55* |
| Financial & material security | 0.70 | 0.04 |
| Family presence & support | 0.50* | 0.39* |
| Family is empowered & engaged in care | 0.50 | 1.00* |
| Childcare services | 0.40 | 0.08 |
| Country foods | 0.40 | 0.14 |
| Care in Inuktitut | 0.40* | 0.36 |
| Inuk midwife | 0.40* | 0.14* |
| Families understand health condition & care plan | 0.20 | 0.37 |
| Inuit culture & tradition | 0.20 | 0.23 |
| Mother and baby are healthy & well | 0.10 | 0.31 |
| Culturally safe & knowledgeable staff | 0.10 | 0.46* |
| Integrated postpartum care | 0.10 | 0.07 |
| North & South medical teams work well together | 0.10 | 0.12 |
| Culturally adapted & Inuit-led services | 0.10 | 0.21 |
| Continuity of care | 0.00 | 0.15 |
| Prenatal education & preparation | 0.00 | 0.18* |

* Indicates a high priority recommendation as identified by study participants.

## 3. Results

Giving birth in a good way had multiple protective and supportive elements for both Inuit and their providers. The lead author developed a first level of themes using a pattern-matching table[5(p. 3827)] to arrange concepts with similar meanings into 17 corresponding categories of actionable concepts (Table 1). In the table, an asterisk indicates a high-priority recommendation.

Figure 1 depicts the reduced map for Inuit participants. Constructed from five maps made by eight individuals, it contains 11 nodes and 16 edges. The perinatal providers' map illustrates the combined perspectives of 24 staff members across 13 maps, with 11 nodes and 17 edges (Figure 2).

*3.1 Families feel safe and at home*

Participants acknowledged the stress of staying at the accommodation center and made several recommendations for improvements.

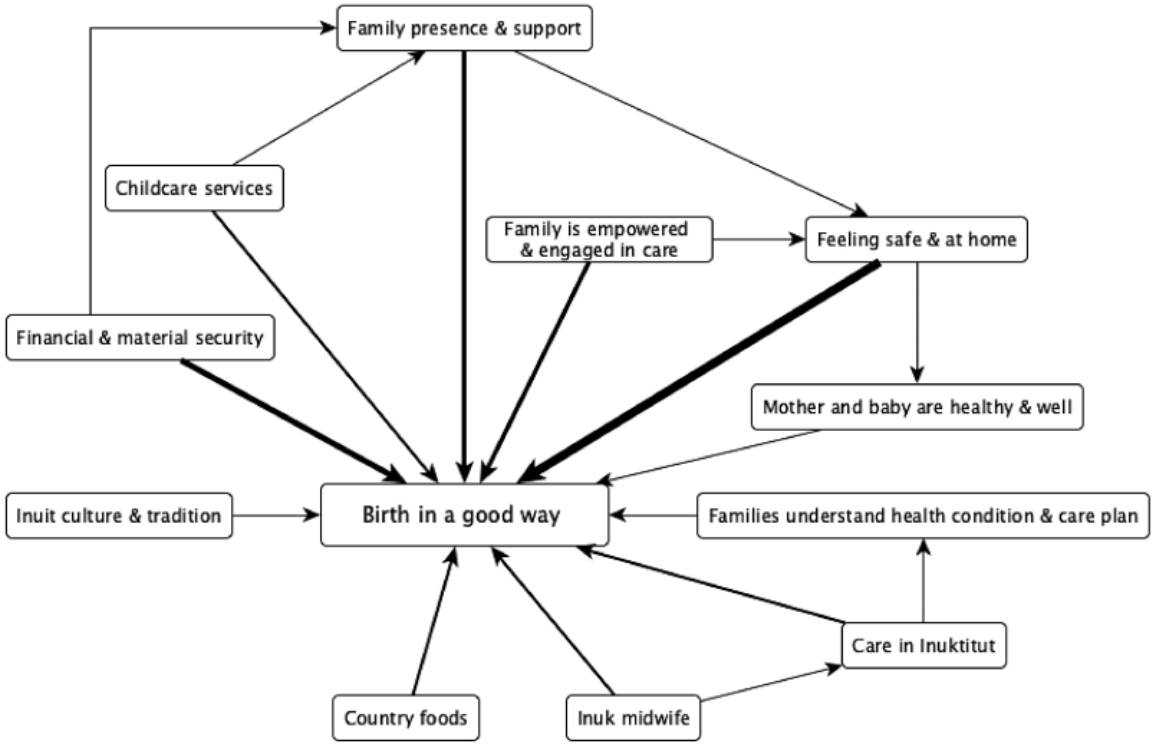


FIGURE 1 Inuit fuzzy cognitive map of giving birth in a good way in Montreal. Relationships with a cumulative net influence of ≥0.20 are indicated, with thicker edges indicating stronger relationships.

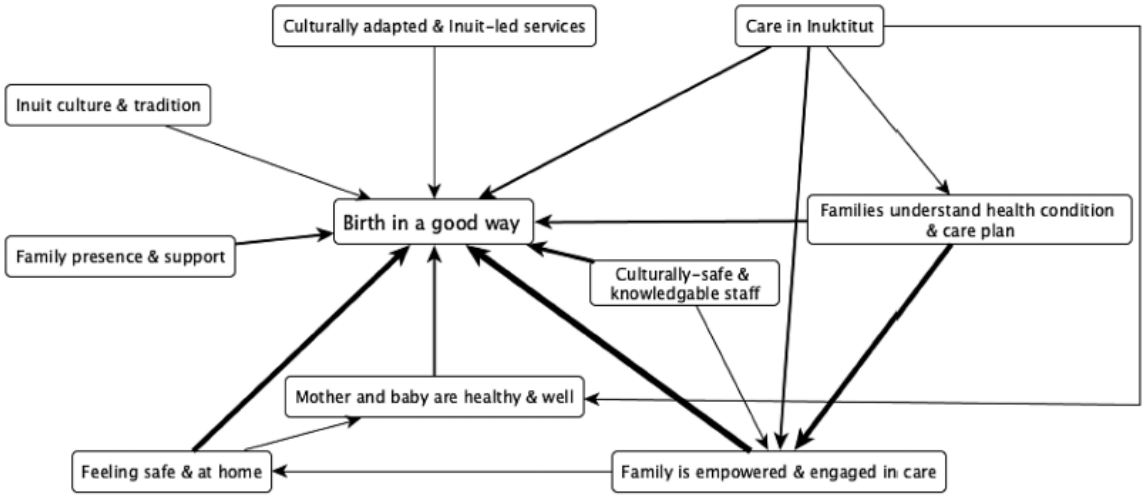


FIGURE 2 Medical provider fuzzy cognitive map of giving birth in a good way in Montreal. Relationships with a cumulative net influence of 0.20 are indicated, with thicker edges indicating stronger relationships.

They felt the center was unsuitable to accommodate families for long durations. Small rooms, uncomfortable beds, lack of access to internet, and bathtubs were often linked to family stress and discomfort. They frequently cited security issues, illustrated by a mother's testimony:

> "They [housekeeping staff] can just barge in any time they want, the lock doesn't even work because the housemaids can come in anytime they want… we had to lock our door with a chair so we could hear them coming."

In addition to the discomforts of institutional housing, participants spoke of the importance of feeling at home as a protective factor for birthing in a good way (Inuit map 1.0, provider map 0.55, on a scale of 0–1). Participants suggested addressing these challenges by establishing a family transit house in Montreal: a shared, home-like environment where families have autonomy over household tasks and childcare. Inuit who must travel outside their communities for childbirth in the Nunavik maternities have access to family-centered transit housing, giving them a point of comparison when traveling to Montreal for birth.

*3.2 Family is present and supportive*

Family presence throughout women's stays in Montreal was a strong facilitator of birth in a good way for both Inuit and providers (0.50 and 0.39, respectively). In addition to the presence of partners and grandparents, Inuit also emphasized the importance of being able to bring along older siblings to establish family bonds with the newborn. A mother described the significance of older children's presence throughout the perinatal period and birth of their sibling:

> "I want him to be there for every step of the way, from seeing the way my body grows to seeing the baby being born and developing that special connection with them."

Participants cited a lack of financial support as the principal barrier to family presence. The current transportation policy allows for one adult escort to accompany a mother to Montreal for childbirth. Families also identified the hospital visitor policy (two adults maximum) as a barrier to family-centered birth, contrasting their isolated and lonely experiences of birth in Montreal with those of women surrounded by family in the Nunavik birthing centers.

*3.3 Families have adequate financial & material support*

Inuit advocated for additional financial and material support, especially for families evacuated for extended periods of time (Inuit map 0.70, provider map 0.04). While current policy covers transportation, lodging, and meals for one escort, women who bring down additional family members must bear the exorbitant cost. In addition to these expenses, the accompanying

family must frequently miss out on wages. Inuit recommended more financial assistance for personal transportation in the city, more food coupons, and funds to bring down family, as well as newborn items (clothing, diapers, etc.). They described financial assistance as the strongest facilitator for family presence during childbirth.

*3.4 Families are empowered and engaged in care*

Participants frequently mentioned that staff should engage families in their medical decision-making and care (Inuit 0.50, providers 1.0). For providers, family empowerment and engagement were underpinned by compassion and empathy. Phrases such as "trauma-informed," "culturally safe," and "anti-racist" were used to describe approaches providers believed would maximize autonomy and choice in care. For providers, this engagement was contingent upon families understanding their health condition, giving informed consent, and collaborating the care plan. This was echoed by families who described feeling that their care was outside their control and a desire to be more involved in decision-making. Providers advocated for patient education materials and consent forms in Inuktitut to increase family engagement.

Both groups advocated for more respect for families' wishes in childbirth. Recommendations included allowing women to move freely during labor, choose their birthing position, and have family members assume traditionally significant roles that help connect the newborn to the community, such as the saunik or namesake and cutting the umbilical cord.

*3.5 Staff is competent and knowledgeable about Inuit health & culture*

Incidents of staff racism and disrespect arose frequently during mapping sessions. Inuit described some staff as being "mean" or "racist," and lacking compassion at the accommodation center. Their accounts shed light on the challenges they face:

> "They [security guards] always have to check our pockets. I was even asked to open my water bottle because they thought it was alcohol. I was being belittled… they assumed that all Inuit are alcoholics." (Inuk mother).
>
> "To be honest I had better treatment when I was a prisoner than when I was at [the accommodation center] … The human rights things are out the window when you stay there" (Inuk father).

Such incidents are significant barriers to family wellbeing, and participants believed they stem from a lack of understanding of Inuit culture, colonialism, and the stressful reality of evacuation. Providers at both the accommodation center and hospital advocated to address these

issues by training on Inuit health and culture, anti-racism, and cultural safety (Inuit map 0.10, provider map 0.46).

*3.6 Care in Inuktitut*

The ability to speak Inuktitut is central to Inuit (0.40) and provider (0.40) perceptions of birthing in a good way. Although most families speak English, participants acknowledged that language barriers contributed to poor communication, misunderstandings, and tension between staff and families. The limited Inuktitut interpreters available was frequently cited as a significant barrier. Both Inuit and providers recommended hiring more interpreters at the accommodation center and hospital.

*3.7 Giving birth with an Inuk midwife*

All participants recommended having Inuit midwives to offer prenatal and intrapartum care at the hospital (Inuit map 0.40, provider map 0.14). A mother described the unique support she received from her Nunavik-based Inuk midwife despite being transferred to Montreal, "Every time I spoke to the [Community] midwife I felt more safe." Both families and providers believed Inuit midwives play a critical role in ensuring a healthy pregnancy and a culturally safe birth experience, bridging the gap between traditional Inuit ways and western biomedical practice.

*3.8 Eating healthy, country foods*

Fresh foods and traditional country foods figured predominantly in participant visions for good birth away from home, with caribou and beluga seen as key to maintaining women's health in the perinatal period (Inuit map 0.40, provider map 0.14). Yet, both Inuit and providers mentioned that the food provided at the accommodation center was of poor quality. Lacking access to country foods in the south, families must transport their own—a costly endeavor few can afford. Participants suggested that country foods be made available at the accommodation center and in hospital.

*3.9 Being surrounded by Inuit culture*

Participants recommended offering social activities and cultural programs for families (Inuit 0.20, providers 0.23). Inuit described that between medical appointments at the hospital

and waiting at the accommodation center, they felt stuck in limbo. They suggested sewing workshops, elder-led support services, and outdoor activities.

*3.10 Health services are culturally adapted and Inuit-led*

Families described the cultural gaps between themselves and non-Inuit staff as a great stressor and felt that services provided by Inuit would be more attuned to their needs. Of particular concern for providers was the lack of Inuit caseworkers who could provide culturally appropriate support for families under child protection services supervision.

Other recommended services included offering Inuit-led childcare services (Inuit map 0.40, provider map 0.08) and postpartum care at the accommodation center (Inuit 0.10, providers 0.07), having flexible prenatal appointments, and hiring more Inuit staff including mental health workers and patient navigators (Inuit 0.10, providers 0.21) at the hospital and accommodation center.

*3.11 Families receive prenatal education & preparation*

Providers advocated for more perinatal education and support for families across the care pathway. They suggested that prenatal classes be offered at the accommodation center, as well as tours of the hospital. The significance of perinatal support and education was demonstrated in a first-time mother's account of her postpartum experience in hospital:

> "For my first pregnancy I didn't know what to expect, I didn't know what I needed. It was stressing for me because after birth I wanted to feel comfortable. I didn't have those [menstrual pads and underwear] in hand and I didn't know I would be at the hospital so long."

*3.12 Mother and baby are healthy and well*

Maternal-child wellness was important to participants' visions of birth in a good way (Inuit map 0.10, provider map 0.31). They regarded maternal-child physical, emotional, and spiritual wellness as intimately linked to a good birth experience. Many Inuit also linked other concepts that contribute to birth in a good way to enhanced maternal-child wellness. While providers regarded wellness as a contributing factor, the centrality measure in the Inuit map pointed toward this being more of an outcome for Inuit (net influence of outgoing arrows summed 0, while the sum of incoming arrows was 0.40).

*3.13 Integrated knowledge translation and changes during the research*

As a participatory research venture, stakeholders were highly engaged in the process. This led to several initiatives addressing the findings of the research even before its completion. For example, a group of providers and Inuit mothers developed a proposal that received funding to implement four shared recommendations to support culturally safe birth in Montreal. They include a family-centered visitor policy during childbirth, provision of country foods at the accommodation center and in hospital, a cultural safety perinatal educational program for Qallunaat staff led by Inuit midwives, and display of Inuit art on the hospital units.

## 4. Discussion

FCM facilitates the comparison of diverse perspectives on the same topic. We found several ways in which Inuit and Qallunaat perspectives intersect and diverge, and we discuss their relationship to the existing literature on the subject.

The theme of feeling safe and at home resonated with Inuit and providers, with the strongest positive influence on maternal-child wellness for both groups. This is also a high priority in other research on Indigenous maternal evacuation.[15] For most participants, this meant a family transit house. This could be due to the protective effects of family support and autonomy over one's living environment that a transit house could offer—a connection made by Inuit participants and elsewhere in the literature.[18] Albeit with lower scores in provider maps, participants regarded Inuit midwifery care as an important priority and a facilitator of safe birth. In addition to supporting maternal-child wellness, our findings suggest Inuit midwives play a key role in fostering family empowerment and ensuring continuity of care—another shared priority for Inuit and their providers, and a finding extensively documented in previous research.[2,18–20]

Inuit and provider views diverged on the need for financial and material support. Inuit felt financial support could free up more funds to bring down additional family members—a highly advocated priority documented elsewhere.[3(p. 7),18] The diverging views on unmet needs extended to other areas such as childcare services and traditional country foods. Addressing these inequities and other socioeconomic disparities has been at the center of Indigenous-led advocacy for perinatal wellness for decades. [18,20] Staff skills in cultural safety were a more pressing concern for providers than for Inuit. Echoing other research, our findings suggest that culturally safe encounters with well-trained providers can empower families, promote access to traditional perinatal practices, and improve overall maternal-child wellbeing.[17(p.125),21,22]

## 5. Limitations

In addition to the general limitations of FCM,[5(p.3828)] particularly that this is a snapshot of current perspectives, interpreting concepts across cultural gaps adds complexity. We report here the mapping conducted in Montreal, thus including a disproportionate number of service provider maps. Additional mapping to collate Inuit community views is ongoing throughout Nunavik and will be reported separately. Our work focuses on Nunavik and does not offer comparisons with the rest of the Inuit Nunangat.

While Inuit participated in mapping sessions in English or Inuktitut, the final maps were translated into English, inevitably altering the meanings of certain concepts— a challenge documented in other intercultural settings.[9] The small number of Inuit maps also limits the reliability of the findings using Harris' discourse analysis and their generalizability to the views of all evacuated Inuit.[12] Moreover, the small number of Inuit participants relative to providers (Inuit n = 5, providers n = 13) further limits our interpretations of culturally safe birth, as it is Inuit who decide what constitutes cultural safety. The stressors of being away from home in the context of medically complicated pregnancies may explain the low level of Inuit participation. The research team made several assumptions, based on the mapping process and throughout the thematic analysis. Subsequent member-checking with map authors facilitated the intercultural analyses and supported our findings.[23]

## 6. Conclusion

FCM was a useful and effective method for summarizing and comparing perspectives of culturally safe birth of Inuit and their providers. Our results outline a terrain of shared priorities from which to make concrete changes to health services, some of which are already underway. Where the visions of Inuit diverge from those of their providers, FCM offers an opportunity to prioritize Inuit voices in health service redesign to ensure safe birth in as good a way as possible for all Inuit, even when it must occur thousands of kilometers away from home.

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**Data Availability Statement**

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

**ORCID**

Hilah Silver https://orcid.org/0000-0001-9281-6805
Iván Sarmiento https://orcid.org/0000-0003-2871-1464

## REFERENCES


1. Sharma S, Kolahdooz F, Launier K, et al. Canadian indigenous women's perspectives of maternal health and health care ser- vices: a systematic review. *Divers Equal Health Care*. 2016;13(5). doi:10.21767/2049-5471.100073
2. Wagner V, Osepchook C, Harney E, Crosbie C, Tulugak M. Remote midwifery in Nunavik, Québec, Canada: outcomes of perinatal care for the Inuulitsivik Health Centre, 2000-2007. *Birth*. 2012;39(3):230-237. doi:10.1111/j.1523-536X.2012.00552.x
3. Silver H, Sarmiento I, Pimentel J-P, et al. Childbirth evacuation among rural and remote indigenous communities in Canada: a scoping review. *Women Birth*. 2022;35(1):11-22. doi:10.1016/j.wombi.2021.03.003
4. Statistics Canada. Nunavik, Quebec. *Aboriginal Population Profile, 2016 Census*. Accessed December 10, 2022. https:// www12.statcan.gc.ca/census-recensement/2016/dp-pd/abpop prof/details/page.cfm?Lang=E&Geo1=AB&Code1=2016C 1005084&Data=Count&SearchText=Nunavik&SearchType =Begins&B1=All&GeoLevel=PR&GeoCode=2016C10050 84&SEX_ID=1&AGE_ID=1&RESGEO_ID=1
5. Andersson N, Silver H. Fuzzy cognitive mapping: an old tool with new uses in nursing research. *J Adv Nurs*. 2019;75(12):3823-3830. doi:10.1111/jan.14192
6. Kosko B. Fuzzy Logic. *Fuzzy Thinking: the New Science of Fuzzy Logic*. 1st ed. Hyperion; 1993.
7. Giles BG, Findlay CS, Haas G, LaFrance B, Laughing W, Pembleton S. Integrating conventional science and ab- original perspectives on diabetes using fuzzy cognitive maps. *Soc Sci Med*. 2007;64(3):562-576. doi:10.1016/j. socscimed.2006.09.007
8. Tratt E, Sarmiento I, Gamelin R, Nayoumealuk J, Andersson N, Brassard P. Fuzzy cognitive mapping with Inuit women: what needs to change to improve cervical cancer screen- ing in Nunavik, northern Quebec? *BMC Health Serv Res*. 2020;20(1):529. doi:10.1186/s12913-020-05399-9
9. Sarmiento I, Paredes-Solís S, Loutfi D, Dion A, Cockcroft A, Andersson N. Fuzzy cognitive mapping and soft models of indigenous knowledge on maternal health in Guerrero, Mexico. *BMC Med Res Methodol*. 2020;20(1):125. doi:10.1186/ s12874-020-00998-w
10. Belaid L, Atim P, Atim E, et al. Communities and service pro- viders address access to perinatal care in postconflict north- ern Uganda: socialising evidence for participatory action. *Fam Med Community Health*. 2021;9(2):e000610. doi:10.1136/ fmch-2020-000610
11. Sarmiento I, Ansari U, Omer K, et al. Causes of short birth interval (kunika) in Bauchi state, Nigeria: systematizing local knowledge with fuzzy cognitive mapping. *Reprod Health*. 2021;18(1):74. doi:10.1186/s12978-021-01066-2
12. Sarmiento I, Cockcroft A, Dion A, et al. Combining conceptual frameworks on maternal health in indigenous communities— fuzzy cognitive mapping using participant and

operator- independent weighting. *Field Methods*. 2022;34:223-239. doi:1 0.1177/1525822X211070463
13. Harris ZS. Discourse analysis. *Language*. 1952;28(1):1-30.
14. yWorkds (2017). Accessed June 2021. www.yworks.com/produ cts/yed
15. Niesink P, Poulin K, Šajna M. Computing transitive clo- sure of bipolar weighted digraphs. *Discret Appl Math*. 2013;161(1–2):217-243. doi:10.1016/j.dam.2012.06.013
16. Braun V, Clarke V. Reflecting on reflexive thematic analysis. *Qual Res Sport Exerc Health*. 2019;11(4):589-597. doi:10.1080/2159676X.2019.1628806
17. Gray SA, Gray S, De kok JL, et al. Using fuzzy cognitive map- ping as a participatory approach to analyze change, preferred states, and perceived resilience of social-ecological systems. *Ecol Soc*. 2015;20(2).
18. Bird P. *Exploring Models for Quality Maternity Care in First Nations and Inuit Communities: A Preliminary Needs Assessment*. Ajunnginiq Centre, National Aboriginal Health Organization. Accessed April 2, 2006 https://www.deslibris.ca/ ID/205421; 2020.
19. Houd S, Qinuajuak J, Epoo B. The outcome of perinatal care in Inukjuak, Nunavik, Canada 1998–2002. *Int J Circumpolar Health*. 2004;63(Sup2):239-241. doi:10.3402/ijch.v63i0.17909
20. Pauktuutit, Special report on traditional midwifery. Pauktuutit Inuit Women's association of Canada. *Suvaguuq*. 1995;10(1):1-12.
21. Gatto B. *Taking action: thinking out of the box–an action plan on maternal-infant care for aboriginal families*. Native Women's Association of Canada; 2010.
22. Cidro J, Bach R, Frohlick S. Canada's forced birth travel: to- wards feminist indigenous reproductive mobilities. *Mobilities*. 2020;15(2):173-187. doi:10.1080/17450101.2020.1730611
23. Koelsch LE. Reconceptualizing the member check inter- view. *Int J Qual Methods*. 2013;12(1):168-179. doi:10.1177/ 160940691301200105

# Chapter 4: Implementation of co-designed cultural safety interventions in the context of Indigenous childbirth evacuation

**Bridging statement**

The scoping review (Chapter 2) highlighted many of the adverse outcomes associated with childbirth evacuation. It indicated that Indigenous Peoples frequently experience poor quality of care across the evacuation trajectory, from transportation, through to accommodation and in-hospital services. Chapter 3 of my thesis supported this finding from the scoping review, with Inuit evacuees and service providers repeatedly highlighting the poor quality of services at the hospital and local accommodation centre. Fuzzy cognitive mapping engaged participants in visioning local solutions, generating a series of recommendations for a culturally safer experience of Inuit childbirth evacuation. Advocating for Inuit-led, family-centered, and culturally adapted services, Chapter 3 identified *what* needs to change. The next chapter of my thesis illustrates *how* such change can happen, describing the co-design, implementation, and evaluation of stakeholder recommendations for a culturally safer experience of childbirth evacuation for Cree of Eeyou-Ischtee and Inuit families. It endeavours to answer research question 3 of my thesis: *How can Indigenous stakeholders and their perinatal service providers be engaged in co-design, implementation, and evaluation of cultural safety interventions in a high-risk obstetrics setting?*

Integrated knowledge translation was the key to moving the evidence from Chapter 3 into action (98). I summarized participant recommendations in a plain language report, presenting the findings to stakeholders from the MUHC, Ullivik and Nunavik. A summary of Inuit participant recommendations was also included in a report by Pauktuutit Inuit Women's Association submitted to the federal government in 2022. Lastly, I disseminated the recommendations to the wider public through a CBC news article featuring the voices of Inuit mothers and midwives collaborating on the research (97).

Through narrative description, Chapter 4 illustrates a collaboration of Indigenous stakeholders and service providers in the aftermath of the death of Joyce Echaquan – an Atikamekw First Nation woman who died in September 2020 at a hospital in Joliette, Quebec due to medical negligence born of systemic anti-Indigenous racism. Following her death, the Atikamekw

Nehirowisiw First Nation and the Council of the Atikamekw of Manawan created Joyce's Principle. Joyce's Principle calls on the citizens, institutions, and governing bodies of Quebec to "guarantee to all Indigenous people the right of equitable access, without any discrimination, to all social and health services, as well as the right to enjoy the best possible physical, mental, emotional, and spiritual health. Joyce's Principle requires the recognition and respect of Indigenous people's traditional and living knowledge in all aspects of health" (99) (pp.10).

In response to the calls to action in Joyce's Principle, I co-founded a coalition of Indigenous and allied service providers whose mission was to implement Joyce's Principle in medical establishments throughout Quebec, along with a local chapter at the Women's Health Mission (WHM) of the MUHC. After the local chapter succeeded in securing a hospital-wide adoption of Joyce's Principle, I gathered a working group of service providers and managers at the WHM to concretely answer the calls to action in the Principle through the implementation of the recommendations from the FCM described in Chapter 3.

Implementing Joyce's Principle at the WHM led to collaboration with Cree of Eeyou-Ischtee, many of whom are also evacuated to the MUHC for childbirth (although less frequently than Inuit from Nunavik). A member of the working group with connections to Eeyou-Ischtee communities validated the relevance of the recommendations from Chapter 3 through semi-structured interviews with Eeyou-Ischtee and their perinatal service providers. I then developed a proposal for the local implementation of four shared high-priority recommendations, successfully financing the project through a local hospital grant in collaboration with Inuit and Eeyou-Ischtee service providers. The four recommendations included (1) an Indigenous-led cultural safety training for hospital staff, (2) increased family support during childbirth, (3) access to traditional country foods, and (4) support of Indigenous perinatal traditions. The selection of high-priority recommendations shared by *all* stakeholder groups for implementation in a unique political moment was key to the accelerated collaboration and success of the project.

As described in the Chapter 1 of my thesis, cultural safety goes beyond changes in providers' knowledge to demand institutional change that concretely benefits Indigenous Peoples. Pointing to the limited evidence of the application of cultural safety interventions in health care, critics have questioned *how* it can truly be implemented to create meaningful institutional change (41). Although the project is context-specific, the practice paper in the following chapter contributes

three insights with wider application and relevance. First, the narrative description outlines a concrete example of operationalizing the co-design, implementation, and evaluation of cultural safety interventions with Indigenous stakeholders in high-risk obstetrics. Second, the paper also illustrates how projects grounded in participatory research principles can be easily expanded to other Indigenous groups through engagement and building upon prior input. Lastly, it highlights the application of an impact assessment tool for cultural safety interventions, describing the process of launching and testing a co-designed cultural safety perinatal curriculum for service providers against a modified theory of planned behaviour (acronym CASCADA). As a 2013 environmental scan of cultural safety trainings conducted by the National Collaborating Centre for Aboriginal Health observed, cultural safety training for health service providers does not necessarily lead to culturally safer care for Indigenous Peoples (100). Developing tools that can capture both the mechanism of changes in service providers knowledge and behaviours, along with their associated impacts for Indigenous Peoples is necessary for designing effective interventions.

**Co-designing Culturally Safe Indigenous Birth in High-Risk Obstetrics: Implementing Joyce's Principle with Inuit and Cree Families and their Medical Providers (Manuscript 3)**

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Hilah Silver RN, BScN, PhD (candidate)[1,2] | Mischa Corman-François RN, BSCN[2] | Sophia Kapellas RN, MScN[2] | Jennifer Pepin RN, BScN[2] | Paasa Lemire[3] | Iván Sarmiento PhD[1,4] | | Neil Andersson MD, PhD[1,5]

[1]*Department of Family Medicine, McGill University, Montréal, Québec, Canada*
[2]*McGill University Health Centre Research Institute, Montréal, Québec, Canada*
*3Nunavik Regional Board of Health and Social Services*
[4]*Escuela de Medicina y Ciencias de la Salud, Universidad del Rosario, Bogotá, Colombia*
[5]*Department of Sociology, McGill University, Montréal, Québec, Canada*
[6]*Centro de Investigación de Enfermedades Tropicales – CIET, Universidad Autónoma de Guerrero, Acapulco, Mexico*

ABSTRACT

**Introduction**. Maternal evacuation – the transfer of women for childbirth – affects Indigenous families living in remote regions of Canada. With mounting evidence of evacuation's adverse health outcomes, an interdisciplinary working group sought to enhance cultural safety in childbirth in a high-risk obstetrical unit serving evacuee Inuit and Cree. **Methods.** Inuit and Cree families and perinatal service providers generated fuzzy cognitive maps of their vision for safe birth. Following Joyce's Principle, Indigenous collaborators and patient partners guided the design, implementation, and impact assessment. **Results.** The working group selected four high-priority recommendations: (1) Indigenous-led cultural safety training for staff, (2) increased family support during childbirth, (3) access to traditional country foods, and (4) support of Indigenous perinatal traditions. **Discussion**. Our project offers a precedent for building relationships and engaging Indigenous stakeholders in health service redesign in the context of Indigenous maternal evacuation and in accordance with Joyce's Principle.

INTRODUCTION

Giving birth thousands of kilometers away from one's home and family is the reality for many Indigenous people living in rural and remote communities in Canada (Smylie et al., 2021). Maternal evacuation – the routine medical transfer of people for pregnancy-related care and

childbirth – affects Inuit and Cree families living in Northern Quebec (see Figure 1). Among Nunavimmiut (Inuit from Nunavik in Northern Quebec) maternal evacuation rates range from 14-33% (Van Wagner et al., 2012), while Cree of Eeyou-Istchee (James Bay) see most births take place outside their communities (M. Corman-François, personal communication January 2024). A recent scoping review of the literature on Indigenous maternal evacuation in Canada outlines negative health and social impacts on Indigenous families and communities (Silver et al., 2022). With inequities in perinatal health outcomes continuing to widen between Indigenous and non-Indigenous (Simonet et al., 2010), Quebec urgently needs interventions to address the challenges of Indigenous maternal evacuation.


*Figure 1. Map of Nunavimmiut and Eeyou-Ischtee communities. Printed with permission from Centre universitaire de santé McGill et Secrétariat aux relations avec les Premières Nations et les Inuit, avril 2023, Montréal, Québec, Canada*

The Nunavik Regional Health Board oversees health services for the 13,000 Nunavimmiut living in the 14 coastal communities of Nunavik (Statistics Canada, 2019). Pregnant Nunavimmiut on the Hudson coast are served by the Inuulitsivik Health Centre: a local Level I hospital and three Inuit maternities (midwifery-run birthing centers) in Salluit, Puvirnituq and Inukjuak (Van Wagner et al., 2012). The maternities oversee the care and delivery for people with medically low-risk pregnancies. Those living on the Ungava coast have access to the Tulattavik Ungava Health Centre and their Level I hospital and maternity in Kuujjuaq.

In partnership with the Government of Quebec, the Cree Board of Health and Social Services of James Bay (CBHSSJB) provides care to the 9 communities of the Cree Nation of Eeyou Istchee, accounting for 18,000 people (Grand Council of the Crees, 2023). Midwifery services are available in Chisasibi, Wemindji, and Whapmagoostui along with a midwifery-run birthing center in Chisasibi. The CBHSSJB runs a Level I hospital in Chisasibi and liaises with a Level I hospital in Chibougamau and a level II center in Val d'Or (K. Wou, personal communication December 2023). Although many Nunavimmiut and Cree of Eeyou-Istchee with medically low-risk pregnancies can give birth on their own territories, those requiring specialized obstetric care are routinely transferred to a tertiary care center in Montreal and housed in local accommodation facilities along with non-obstetrical patients to await childbirth. Unlike Nunavimmiut communities, which are accessible only by sea or air, eight of the nine Eeyou Istchee communities are accessible by road. This gives families greater agency and flexibility when travelling to Montreal for birth (M. Corman-François, personal communication December 2023).

In 2021, perinatal medical providers at a Montreal tertiary center formed a working group (referred to as "we" in the remaining pages) following the death of Joyce Echaquan. The 37-year-old Atikamekw Nation mother of seven died in September 2020 in a hospital outside Montreal, under horrifying circumstances of medical negligence and racism (Kirkup & Ha, 2020). Her death sparked a mass movement to end systemic racism in health and social services in Quebec, spearheaded by the Atikamekw Nehirowisiw First Nation and the Council of the Atikamekw of Manawan. Their creation of Joyce's Principle outlined the call to action and commitments to end systemic anti-Indigenous racism in health and social services (Council of The Atikamekw, 2020). Joyce's Principle seeks to secure the right of all Indigenous peoples to equitable health and social services without discrimination and in the respect of Indigenous traditional and living knowledges surrounding health (Council of The Atikamekw, 2020).

The *United for Joyce* interdisciplinary working group, comprised of perinatal nurses, physicians, and hospital administrators, promotes and implements Joyce's Principle within the Women's Health Mission of the Montreal tertiary center. In collaboration with Nunavimmiut and Cree patient partners and perinatal workers, our aim was to implement Indigenous-led co-designed interventions for culturally safe birth for Inuit and Cree families evacuated for childbirth. This article describes co-design of culturally safe interventions over the year-long project: from relationship building with Indigenous stakeholders through to implementation and preliminary evaluation of the interventions. We report the process following Standards for Quality Improvement Reporting Excellence guidelines (Ogrinc et al., 2015).

## METHODS

### *Project Context*

The project was informed by Andersson's (2018) participatory research framework and grounded in the foundational premises of Joyce's Principle. A series of consultations within a longitudinal participatory study on Nunavimmiut culturally safe birth set the foundation. The Nunavimmiut-led advisory committee designed and approved the process, guiding the consultations with evacuated Nunavimmiut families and their Montreal-based medical providers. Using fuzzy cognitive mapping (Andersson & Silver, 2019), the lead author (HS) and an Inuk associate (ST) engaged participants in generating recommendations for culturally safe birth, as well as priority action areas for improving health service delivery in the context of maternal evacuation (Silver et al., 2023).

After member-checking the recommendations with participants, HS drafted a plain language report summarizing participant visions and 17 priority recommendations for culturally safe birth. A working group member with experience in Eeyou-Istchee communities (MCF) validated the relevance of the recommendations through semi-structured interviews with Cree families and their perinatal care providers. A hospital-based nursing innovation award funded the implementation of shared high-priority cultural safety interventions.

### *Project Setting*

The primary site for research and intervention was the Women's Health Mission at the Montreal university-affiliated Level III hospital with service corridors for Nunavimmiut and

Eeyou-Istchee requiring specialized medical care. Approximately 400 Nunavimmiut and Eeyou-Istchee families travel to the hospital annually for pregnancy-related care and account for 10% of all births (J. Pepin, personal communication, April 2022). Evacuee Nunavimmiut and Eeyou-Istchee families are lodged in local accommodation facilities run by their respective regional health authorities.

*Project Participants*

As reported in chapter 3, the first round of consultations engaged eight Nunavimmiut waiting to give birth in Montreal and thirteen medical providers at the hospital and accommodation center for Nunavimmiut. Subsequently, we consulted thirteen medical providers serving the Eeyou-Istchee communities and six Eeyou-Istchee women with experience of maternal evacuation and local childbirth to verify findings of Silver et al. (2023). Staff included physicians, nurses, midwives, community health workers, and a liaison nurse at the Eeyou-Istchee accommodation center in Montreal. We recruited and funded two patient partners - an Inuk mother and Eeyou-Istchee mother and perinatal worker with lived-experience of maternal evacuation - and invited two Nunavimmiut midwives and an Eeyou-Istchee physician as project collaborators. Researchers from the participatory research lab at McGill University (CIET-PRAM), based in Montreal, provided methodological support for developing our impact assessment tools.

*Interventions*

We selected four areas of intervention to support culturally safe birth in the context of Indigenous maternal evacuation, based on the highest-priority recommendations identified by *both* Indigenous families and their medical providers. These were: (1) develop and test an Indigenous-led cultural safety obstetrical training program for hospital staff, (2) increase family presence and support in childbirth, (3) facilitate access to traditional country foods, and (4) promote Nunavimmiut and Eeyou-Istchee perinatal traditions in the context of maternal evacuation.

*Outcome Measures & Analysis*

Staff Questionnaire

We assessed the impact of the cultural safety training program with a seven-item online self-administered pre- and post-intervention questionnaire (Appendix 1). We used a modified theory of planned behavior, proposing that specific knowledge changes behavior through a results chain of intermediate steps (Andersson et al., 2005). Validated for measuring cultural safety training outcomes among medical providers (Pimentel et al., 2021), the questionnaire describes changes in medical provider **C**onscious knowledge, **A**ttitudes, positive deviation from negative **S**ubjective norms, intentions to **C**hange behavior, **A**gency (individual and collective) or ability to change behaviour, **D**iscussion of the need for and feasibility of action and, **A**ction or change of practice (acronym CASCADA) (Andersson et al., 2005). Open-ended questions invited respondents to share their challenges (pre-intervention) and key learnings (post-intervention) related to providing culturally safe care. An independent researcher not associated with the *United for Joyce* working group calculated probabilistic transitive closure (PTC) using CIETmap to determine the net influence of each item in the CASCADA results chain according to direct influences and indirect "walks" (Andersson et al., 2017). We converted pre-and post-questionnaire scores into odds ratios, normalized on the interval [-1,1]. We calculated the *net* probabilistic transitive closure – the cumulative probability of given knowledge resulting in the anticipated action -- by summing the weights of the influences of across all arcs in the CASCADA chain in the range (-6,6).

Family Questionnaire

As cultural safety is not measured in the extent of a provider's knowledge or skill, but by a patient's feeling of safety and respect in a clinical encounter (Kirmayer, 2012), Nunavimmiut and Eeyou-Istchee family perspectives and perceptions are essential indicators for impact assessment. A family experience questionnaire, co-designed with our patient partners and CIET-PRAM researchers will capture Nunavimmiut and Eeyou-Istchee families' perceptions of the interventions (Appendix 2). Guided by our patient partners, we adapted the standard hospital survey for patient satisfaction to capture families' experiences of the four interventions. Our approach was an iterative one, with a preliminary set of questions reviewed and modified by our patient partners. Offered electronically via tablet, the questionnaire will be administered by a

member of the working group who is not involved in direct patient care. A series of close-ended questions assess whether the planned interventions are implemented by staff. Likert-type and open-ended questions investigate the degree to which patients and their families feel respected and safe during their hospital stay. On the advice of our patient partners, storytelling and sharing circles will supplement the questionnaire data. Lastly, the data from families and staff will be regularly collected and reviewed by the working group over 12 months following the launch of our interventions. The findings will facilitate the adjustment of our interventions on an as-needed basis; we will report on this separately.

## RESULTS

Informed by participatory principles of stakeholder-led health service redesign, our project results encompass both the *process* and *outcomes* (Andersson, 2018). In the following section, we illustrate the implementation and partial assessment of the four interventions to support culturally safe birth for Eeyou-Ischtee and Nunavimmiut evacuees.

### *Developing Indigenous-led perinatal cultural safety education for perinatal staff*

Nunavimmiut, Eeyou-Istchee, and allied midwives led the development of a perinatal cultural safety curriculum for hospital staff. Trust and mutual respect were core values. Beginning with online introductory meetings, the working group and Indigenous stakeholders got to know one another on personal and professional levels. Mutually agreed upon learning objectives lay the foundation for the curriculum, followed by regular meetings for curriculum development.

In online presentations and in-person workshops, the curriculum addressed concepts of cultural safety, with specific implications and practical applications for culturally safe perinatal care for Nunavimmiut and Eeyou-Istchee. Staff attended two online Grand Rounds presentations: (1) an introductory presentation on Nunavimmiut health, the realities of northern living and the current healthcare system in Nunavik by the Nunavik liaison midwife, and (2) a presentation on Informed Choice versus Informed Consent by an Eeyou-Istchee midwife and Eeyou-Istchee patient partner.

A weeklong series of in-person workshops with Nunavimmiut midwives strengthened staff knowledge and proficiency in caring for Nunavimmiut evacuee families. The workshops

began with a survey of Inuit history and culture (including intergenerational trauma and colonialism, and contemporary realities and challenges facing Nunavimmiut), followed by a deeper examination of Nunavimmiut perinatal traditions and methods of supporting families in the context of evacuation. Many perinatal staff and all nursing staff of the birth center attended, along with staff from the local Inuit accommodation center.

55 percent of workshop attendees completed the questionnaires. All participants who completed pre- and post-tests were women. Most were nurses (38/44 or 88%) in their first training session with the Nunavimmiut midwives (43/44 or 98%). One half of the participants had more than 10 years experience as medical providers (22/44). Four had additional experience working in Indigenous communities, and almost all the participants (43/44 or 98%) reported their experience working with Indigenous women was in women's health at the hospital.

Figure 2 shows the impact of the training in transitive closure of CASCADA from pre and post staff questionnaires, with green arcs representing positive influences and red arcs negative influences of each intermediate outcome on all others. Thicker lines indicate stronger influences. The cumulative net influence across the CASCADA sequence increased from 4.70 to 5.58 out of a possible maximum value of 6, showing a post-intervention increased influence of the Knowledge on Action. Pre-intervention, there was a negative cumulative influence of Subjective norms on Agency (-0.21) – respondents did not feel *able* to act on what they knew about cultural safety. After the intervention, the results chain changed notably at the point of Agency, indicating this was a key impact of the intervention. (See Appendix 2 for complete CASCADA cumulative weights). A 1-hour video presentation recorded by the midwives captured the knowledge for future staff.

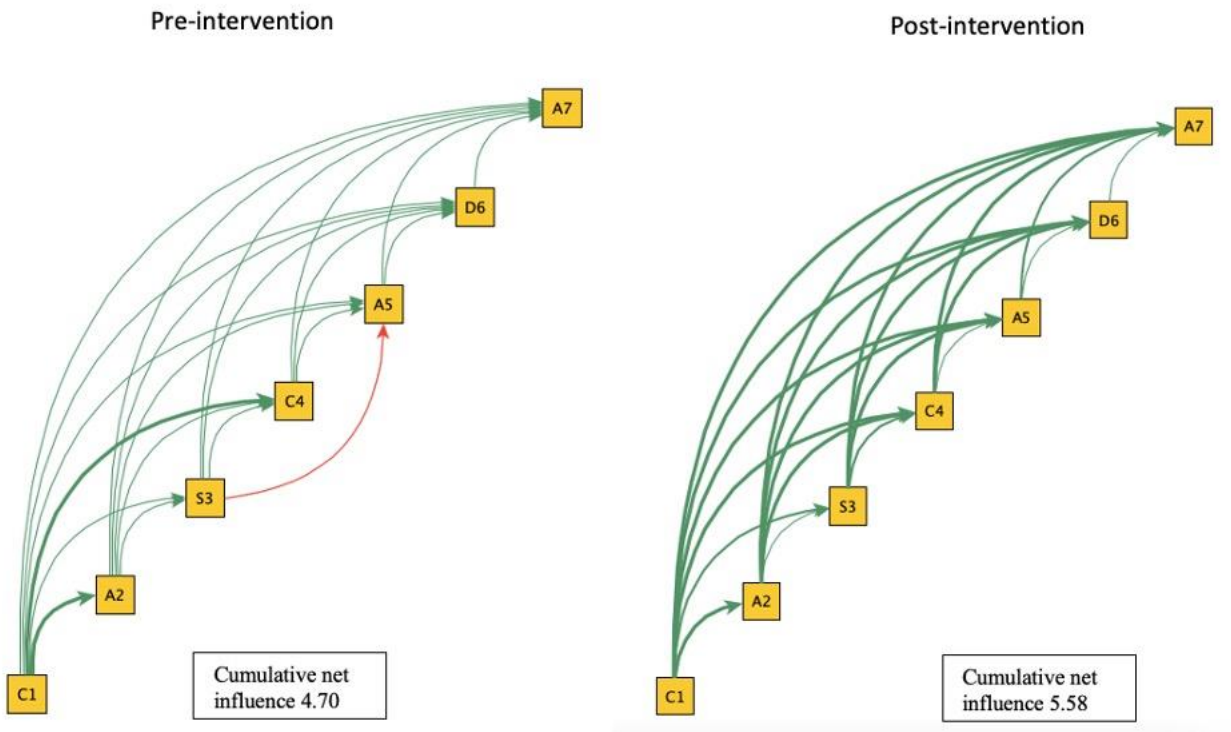


*Figure 2. Probabilistic transitive closure of the CASCADA results chain pre-and post-intervention.*

*Increasing family presence and support during childbirth*

Nunavimmiut and Eeyou-Istchee have little family support when transferred to our hospital for birth. Long distances, unpredictable weather, limited government funding, high travel costs, and stays in Montreal lasting weeks to months are among the many barriers to family presence and support. Our hospital visitor policy (maximum two persons) was another important obstacle to family presence, contrasting sharply with the collective experience of childbirth in the communities, where family and community members play important social roles in intergenerational transmission of traditional knowledge during childbirth.

Consultations with Eeyou-Istchee and Nunavimmiut midwives lay a culturally safer foundation for an expanded visitor policy in the birthing center, allowing up to four visitors. A rapid review of the literature on expanded visitor policies in acute care settings added information. Since our objective was to be a family-centered birth center, we strove for a *culturally transformative* approach, as opposed to mere policy change. This required a focus on

staff skill-building in communicating with families, as well as their knowledge of Nunavimmiut and Eeyou-Istchee communities.

A new booklet for staff now outlines basic information about Nunavimmiut and Eeyou-Istchee communities, their perinatal customs and basic Cree and Inuktitut phrases. Along with a detailed explanation of the expanded visitor policy, we also included a communication guide with prompts for navigating common challenging situations such as medical emergencies, invasive clinical procedures, and safety measures. A companion booklet for families outlines the visitor policy and includes information about the hospital units, designated family spaces, and infection prevention measures, as well as a photo catalogue of cultural items available to families for decorating their rooms during their admission (see details below).

*Access to Traditional Country Foods*

Central to Nunavimmiut and Eeyou-Istchee health, country foods such as caribou, arctic char and berries are regarded as especially important for perinatal wellness. Evacuee families have limited access to traditional country foods while staying in Montreal, frequently relying on fast food or institutional food of poor quality. A limited supply of country foods is available at the local accommodation centers, usually transported to Montreal by the families themselves, or other community members traveling to Montreal for medical care. Larger quantities of country foods are occasionally donated during seasonal hunting and harvest.

To support family access at the hospital, we installed a country food fridge and freezer on the postpartum unit to facilitate storage and onsite preparation. The informational booklet welcomes families to a seasonal supply of traditional broths and stews, Chisasibi and Labrador teas, and bannock on order from the hospital cafeteria. In partnership with the Nunavimmiut and Eeyou-Istchee accommodation centers and a local Inuit organization, we established a service corridor for country food transportation to the hospital to facilitate continued access for families.

*Supporting Nunavimmiut and Eeyou-Istchee perinatal traditions*

Access to Nunavimmiut and Eeyou-Istchee perinatal traditions and cultural items rounded off our interventions for culturally safer care. Our patient partners led the selection of a series of artworks by Nunavimmiut and Eeyou-Istchee artists including paintings, prints and seal pelts for families to decorate their hospital rooms. Essential oil diffusers and smudging sprays

provide families with familiar scents from home during labor, while beading kits offer respite for those experiencing lengthy hospital stays.

Explanations of key perinatal items such as the Inuit Amauti and Immuti and the Cree Waaspsuyan (traditional infant wraps and carriers) were included in the staff informational booklet. A detailed guide for facilitating patients' access to their placenta was included at the recommendation of our patient partners, along with information on culturally adapted mental health services and Inuktitut and Cree interpreter services. The booklet also contains resources for families on accessing complementary care within the hospital (such as spiritual care services), at their respective health authorities, and in the greater Montreal area.

## DISCUSSION

Our project offers an example of Indigenous-led co-design of culturally safe health services in the context of maternal evacuation for childbirth in tertiary obstetrics. As pointed out in a realist review of Indigenous prenatal health programs across Canada, high levels of community investment, participation, and leadership are associated with positive program changes across a range of maternal-child health outcomes (Smylie et al., 2016). Indeed, our preliminary assessments demonstrate rapid uptake and positive impacts of the interventions. Furthermore, by engaging Indigenous stakeholders from the outset, we believe our project offers a concrete and reproducible example of implementing Joyce’s Principle in an acute care setting.

Like other health initiatives with meaningful engagement with Indigenous communities, cultivating mutual respect and trust was at the cornerstone of our work (Peake et al., 2021). Such relationships are as essential for the visioning and redesign of services as they are for implementation. Indeed, preliminary staff debriefings revealed a direct link between staff engagement with the Nunavimmiut midwives during their workshops, and positive uptake of the expanded visitor policy in the birthing center. The CIET-PRAM independent impact assessment of the midwifery workshop showed an important increase in participant sense of agency after the training; this released the pre-training “blockage” in the CASCADA at agency, informing our reflection on the nature of the training and how it affects participants. The increased cumulative positive influence across the CASCADA partial order indicates a positive effect of training on the influence of Knowledge about cultural safety on Actions that derive from it.

This exercise could have implications for the health of Nunavimmiut and Cree of Eeyou-Istchee and potential to extend beyond the experience of maternal evacuation. Preliminary work is under way to increase Inuit midwifery capacity through a hospital-based internship in Montreal, as well as an Eeyou-Istchee Elder-led perinatal support service. Future research could evaluate the impact of the interventions on Eeyou-Istchee and Nunavimmiut maternal-infant health outcomes.

We recognise our work, motivated by service improvement rather than research objectives, has several important limitations. Although our consultations with Indigenous families and providers took place over many months, we understand the emerging information as only a snapshot of how those families saw their needs at that point in time. Informative and motivating as they were, the small number of families we were able to engage limits generalizability to all Nunavimmiut and Cree of Eeyou-Istchee. We are currently addressing this limitation through continued assessment of Indigenous family experiences and our ongoing modification of cultural safety interventions on an as-needed basis. Finally, our work focuses on Nunavimmiut and Cree of Eeyou-Istchee perspectives and does not offer comparisons with other rural and remote Indigenous communities who experience maternal evacuation.

While our project is specific in its scope and context, our *process* of relationship building with Indigenous communities and patient partners for stakeholder-led service redesign has wider relevance across healthcare settings seeking to enhance cultural safety and concretely implement Joyce's Principle. Our educational program outlines the steps for creating a clinically tailored Indigenous-led curriculum of cultural safety training based on mutually identified knowledge needs. It is the first step in our response to the Principle's call for "the recognition and respect of Indigenous people's traditional and living knowledge in all aspects of health" (Council of The Atikamekw, 2020, p. 10). Our family-centered visitor policy offers a roadmap for maximizing family presence and support in other acute-care settings. This, along with facilitated access to country foods and traditional perinatal practices are some of the concrete ways in which we aim to secure the rights of Nunavimmiut and Cree of Eeyou-Istchee to "enjoy the best possible physical, mental, emotional and spiritual health" as outlined in Joyce's Principle (Council of The Atikamekw, 2020, p. 10).

To catalyze the definitive implementation of Joyce's Principle in other health establishments, it is critical to increase awareness of anti-Indigenous racism and the importance of culturally safe care in healthcare curricula and institutions. Our working group's dedication to increasing cultural safety was key to the success of our project, motivating long hours of work outside of our clinical commitments. This was grounded in our shared conviction of the importance of Joyce's Principle, our obligation to concretely implement it, and our belief in its ultimate benefit to all families and communities.

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REFERENCES


1. Andersson, N. (2018). Participatory research—A modernizing science for primary health care. *Journal of general and family medicine*, *19*(5), 154-159.
2. Andersson, N., Beauchamp, M., Nava-Aguilera, E., Paredes-Solís, S., & Šajna, M. (2017). The women made it work: fuzzy transitive closure of the results chain in a dengue prevention trial in Mexico. *BMC Public Health*, *17*(1), 133-139.
3. Andersson, N., Cockcroft, A., Ansari, N., Omer, K., Losos, J., Ledogar, R. J., ... & Shea, B. (2005). Household cost-benefit equations and sustainable universal childhood immunisation: a randomised cluster controlled trial in south Pakistan [ISRCTN12421731]. *BMC Public Health*, *5*, 1-6.
4. Andersson, N., & Silver, H. (2019). Fuzzy cognitive mapping: an old tool with new uses in nursing research. *Journal of advanced nursing*, *75*(12), 3823-3830.
5. Grand Council of the Crees (Eeyou Istchee) / Cree Nation Government. (2023). T*he Cree Nation of Eeyou Ischtee.* Grand Council of the Crees (Eeyou Istchee) / Cree Nation Government. https://www.cngov.ca/community-culture/communities/
6. Kirkup, K., Ha, T.T (2020, September 29). *Indigenous woman records slurs, taunts of Quebec hospital staff before her death.* The Globe and Mail. https://www.theglobeandmail.com/canada/article-indigenous-woman-records-slurs-taunts-of-quebec-hospital-staff-before/
7. Kirmayer, L. J. (2012). Rethinking cultural competence. *Transcultural psychiatry*, *49*(2), 149-164.
8. Ogrinc, G., Davies, L., Goodman, D., Batalden, P., Davidoff, F., & Stevens, D. (2015). SQUIRE 2.0 (Standards for QUality Improvement Reporting Excellence): Revised publication guidelines from a detailed consensus process. *The Journal of Continuing Education in Nursing*, *46*(11), 501-507.
9. Peake, R. M., Jackson, D., Lea, J., & Usher, K. (2021). Meaningful engagement with Aboriginal communities using participatory action research to develop culturally appropriate health resources. *Journal of Transcultural Nursing*, *32*(2), 129-136.
10. Pimentel, J., Cockcroft, A., & Andersson, N. (2021). Impact of game jam learning about cultural safety in Colombian medical education: a randomised controlled trial. *BMC medical education*, *21*, 1-12.
11. Silver, H., Sarmiento, I., Pimentel, J. P., Budgell, R., Cockcroft, A., Vang, Z. M., & Andersson, N. (2022). Childbirth evacuation among rural and remote indigenous communities in Canada: a scoping review. *Women and Birth*, *35*(1), 11-22.
12. Silver, H., Tukalak, S., Sarmiento, I., Budgell, R., Cockcroft, A., Vang, Z. M., & Andersson, N. (2023). Giving birth in a good way when it must take place away from home: Participatory research into visions of Inuit families and their Montreal-based medical providers. *Birth*.
13. Simonet, F., Wassimi, S., Heaman, M., Smylie, J., Martens, P., Mchugh, N. G., ... & Luo, Z. C. (2010). Individual-and community-level disparities in birth outcomes and infant mortality among First Nations, Inuit and other populations in Quebec. *The open women's health journal*, *4*, 18.
14. Smylie, J., Kirst, M., McShane, K., Firestone, M., Wolfe, S., & O'Campo, P. (2016). Understanding the role of Indigenous community participation in Indigenous prenatal and infant-toddler health promotion programs in Canada: A realist review. *Social Science & Medicine*, *150*, 128-143.

15. Smylie, J., O'Brien, K., Beaudoin, E., Daoud, N., Bourgeois, C., George, E. H., ... & Ryan, C. (2021). Long-distance travel for birthing among Indigenous and non-Indigenous pregnant people in Canada. *CMAJ*, *193*(25), E948-E955.
16. Statistics Canada. Nunavik, Quebec. (2019, June 19). *Aboriginal Population Profile, 2016 Census Nunavik [Inuit region], Quebec.* Statistics Canada. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/abpopprof/details/page.cfm?Lang=E&Geo1=AB&Code1=2016C1005084&Data=Count&SearchText=Nunavik&SearchType=Begins&B1=All&GeoLevel=PR&GeoCode=2016C1005084&SEX_ID=1&AGE_ID=1&RESGEO_ID=1
17. The Council of the Atikamekw of Manawan and the Council de la Nation Atikamekw (2020, November). *Joyce's Principle*. Principe de Joyce. https://principedejoyce.com/sn_uploads/principe/Joyce_s_Principle_brief___Eng.pdf
18. Van Wagner, V., Osepchook, C., Harney, E., Crosbie, C., & Tulugak, M. (2012). Remote midwifery in Nunavik, Quebec, Canada: outcomes of perinatal care for the Inuulitsivik health centre, 2000–2007. *Birth*, *39*(3), 230-237

# Chapter 5: Community and service provider perspectives on family perinatal wellness and culturally safe childbirth in Nunavik

**Bridging Statement**

Along with the well-known negative impacts on Indigenous women, the scoping review on childbirth evacuation in Chapter 2 highlighted several adverse outcomes at the family and community levels. Excluding families and communities from participating in childbirth, evacuation is linked to significant family disruption, domestic violence, higher rates of depression and reduced hunting and consumption of traditional foods. Removing births from the community also excludes family and community members from meaningful participation in childbirth, interrupting the intergenerational transmission of traditional knowledge. Researchers point to this rupture in knowledge transmission, along with limited and poorly staffed local perinatal services as key contributors to the growing sense for many Indigenous Peoples that their communities are no longer safe spaces for birth (101, 102). Indeed, in my clinical encounters with Inuit who opted to birth in Montreal, their choice was often driven by a lack of confidence in local services in their communities. Together these findings illustrate the need to ground perinatal service design for Inuit in family- and community-centered perspectives.

The next chapter of my thesis takes off from the findings of the scoping review, inspired by the co-design and implementation of culturally safer evacuation services described in Chapters 3 and 4. Chapter 5 aims to support perinatal wellness and culturally safe birthing in Nunavik by answering research question 4 of my thesis, with its three sub-questions:

1. *What does giving birth in a good way in Nunavik mean for Nunavimmiut and their perinatal service providers?*
2. *What do Inuit and their service providers believe can help keep childbirth in Nunavik?*
3. *What are protective factors of family perinatal wellness according to Inuit youth?*

Limited by the COVID-19 pandemic, I recruited and supported two Inuit researchers from Salluit, Nunavik in engaging Inuit and Nunavik-based service providers through fuzzy cognitive mapping (FCM). To support wide participation of voices from the center and margins of the communities, I developed a network of local stakeholders who facilitated participant recruitment. Local midwives, physicians, community perinatal health workers, and schoolteachers

collaborated with the researchers to engage FCM participants. Indeed, integrating the research activities within local services and programs was key to promoting trust and engaging participants in communities experiencing a high burden of research. Across ten communities, 54 FCM sessions engaged 17 youth, 7 Inuit Elders, 14 adult men, 18 adult women, and 17 perinatal service providers on the three research questions posed above. After conducting mappings sessions in ten of the fourteen communities, our Inuit researcher partners indicated that data saturation was reached – a finding supported in my rolling analysis of the maps.

The findings in Chapter 5 highlight FCM as a highly useful tool in collating perspectives across multiple stakeholder groups, clarifying shared visions and indicating diverging needs across the communities, to inform both regional and community-specific perinatal service design. The extensive mapping in Nunavik also supports the relevance of the operator-independent weighting method I had piloted with Inuit evacuees to the communities in Nunavik.

To my knowledge the research described in the following chapter is the first of its kind to examine the perspectives of Inuit youth on maternal and family perinatal wellness using FCM. Conducted at the suggestion of the Inuit-led advisory committee of the longitudinal project, this component of my research offers two further contributions. First, as identified in the scoping review, childbirth evacuation is associated with significant family disruption, uniquely impacting older children that remain behind in the communities. Inuit youth therefore have a unique insights and perspectives on ways to support family wellness in the perinatal period regardless of where childbirth takes place. Second, as Inuit frequently become parents at a significantly younger age compared with non-Indigenous in Quebec (13), engaging youth on the cusp of parenthood can inform the design of well-tailored perinatal services that meet the needs of future families.

**Bringing birth back home: community and service provider visions and pathways for continued local Inuit childbirth in Nunavik (manuscript 4)**

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Hilah Silver RN, BScN, PhD (candidate)[1] | Elisapi Padlayat | Pasha Saviakjuk
Iván Sarmiento PhD[1,2] | Richard Budgell MA[1] | Anne Cockcroft MB, BS, MD[1] |
Zoua M. Vang PhD[3] | Neil Andersson MD, PhD[1,4]

[1]*Department of Family Medicine, McGill University, Montréal, Québec, Canada*
[2]*Escuela de Medicina y Ciencias de la Salud, Universidad del Rosario, Bogotá, Colombia*
[3]*Department of Civil Society & Community Studies, School of Human Ecology, University of Wisconsin-Madison, Madison, Wisconsin, USA*
[4]*Centro de Investigación de Enfermedades Tropicales – CIET, Universidad Autónoma de Guerrero, Acapulco, Mexico*

ABSTRACT

Childbirth on or near traditional territories is unattainable for many Indigenous peoples living in remote communities in Canada. In Nunavik, Inuit territory in northern Quebec, rapid population growth risks exceeding local midwifery capacity. This poses challenges to community-based childbirth in a region recognized for its reclamation of Inuit midwifery and local birthing. We used fuzzy cognitive mapping to collate community views on protective factors of maternal and family perinatal wellness and continued local birthing. In ten communities, Inuit families and perinatal service providers created a total of 54 maps on protective factors for (1) birth in a good way in Nunavik, (2) maternal and family perinatal wellness, and (3) community-based birthing in Nunavik. We used fuzzy transitive closure to examine direct and indirect connections and collated individual factors into categories using inductive thematic analysis. Well-equipped local medical facilities and services, community birthing centres run by Inuit midwives, and Inuit perinatal traditions had the strongest influence on experiencing *birth in a good way in Nunavik*. Inuit youth perspectives featured instrumental and emotional support for mothers and families, along with health and self-care in pregnancy as the most influential factors on *maternal and family perinatal wellness*. Prominent protective factors for *community birth in Nunavik* included maternal-infant health and wellness, local Inuit midwifery services, and well-resourced medical facilities. Fuzzy cognitive mapping was helpful in informing community visioning of local

childbirth and maternal and family perinatal wellness in Nunavik. Inuit-led midwifery services are essential to continued local childbirth in the region.

KEYWORDS (4-6)
Midwifery
Community-birthing
Indigenous health
Participatory research
Inclusive stakeholder consultations
Soft models

STATEMENT OF SIGNIFICANCE

| | |
|---|---|
| Problem | Remote Indigenous communities face inequities in access to local birthing. Local midwifery in Nunavik retains many births in the communities. With rapid population growth outpacing local capacity, we need local solutions to support continued community birthing. |
| What is already known | In the last 40 years, Inuit midwifery services in Nunavik have significantly reduced rates of birthing outside the community. Inuulitsivik midwifery is associated with important health, social, and cultural benefits. |
| What the paper adds | All stakeholders joined the process of identifying factors and pathways that support local birthing. Inuit midwifery services with well-resourced medical facilities and health services are essential for continued perinatal wellness and community birthing. |

## 1. INTRODUCTION

Indigenous communities in Canada face striking inequities in access to local perinatal health services, particularly to support birth on or near traditional territories (9). This is also true for many Inuit living in Inuit Nunangat (Inuit Artic homeland in Canada), where routine transfer of pregnant women thousands of kilometers to urban centers for birth remains a standard practice for many communities since the 1970s (13). In Nunavik in northern Quebec, however, the revitalization of Inuit midwifery retains more than 80% of childbirths in certain communities (13, 63). A well-recognised model of community-led midwifery care, the Inuulitsivik midwifery service and education program has a foundation of community healing and family wellness (70), ensuring maternal-infant health outcomes equal to or better than those of evacuation services (13, 70, 103). Since the establishment of the first local midwifery-run birth center (*Maternity*) in Puvirnituq in 1986, midwifery services expanded across Nunavik to support Inuit perinatal wellness.

A more than fourfold population increase in the last 50 years poses a challenge to continued efforts to keep medically low-risk births in the region (64). A 2015 report by the regional health authority identified a decline in the proportion of midwifery-assisted births among the Inuit communities along the Hudson Bay, forecasting similar saturation of services for the Ungava coast (64). With population growth threatening to outstrip service capacity, locally agreed solutions are necessary to support continued community-birthing in the region.

To safeguard the many health, social, and cultural benefits of local midwifery services, promotion of childbirth in Nunavik and other Indigenous communities must be grounded in context-specific visions and solutions (58, 104). Inuit and their care providers are appropriate voices on protective factors for perinatal wellness and strategies for continued community-based birthing. This article presents community and service provider perspectives on (1) supportive factors for giving birth in a good way in Nunavik, (2) Inuit perinatal maternal and family wellness, and (3) strategies for continued community-based childbirth in Nunavik.

## 2. METHODS

### 2.1 Research Setting

The fourteen communities of Nunavik are spread across the Hudson and Ungava coasts, with populations ranging from 200 to 2700 (105). A regional health authority oversees the delivery of health and social services to the 13,000 Inuit living in Nunavik (105). The Inuulitsivik Health Center and its three maternities provide midwifery care on the Hudson coast (13). Supported by a level 1 hospital in Puvirnituq, the maternities in Salluit, Inukjuak, and Puvirnituq offer Inuit with medically low-risk pregnancies the opportunity to birth locally, while training local midwives in the *Inuulitsivik* model of midwifery known as *Inuulitsiviup Nutarataatitsijingita Ilisarningata Aulagusinga* or INIA (63). Inuit residing in the seven communities on the Ungava coast are served by the Ungava Tulattavik health center, with a level 1 hospital and midwifery services in Kuujjuaq (64). Operating since 2009 under its own midwifery education model, Ungava Tulattavik midwifery was credited with a 54% (n=333) reduction in out of region transfers for pregnancy-related care and childbirth by 2012 (64).

### 2.3 Fuzzy Cognitive Mapping

Fuzzy cognitive mapping (FCM) depicts causal concepts and their consequences (nodes) linked by arrows (edges) (1, 79). A visual display of complex knowledge about a topic, it has wide

applications across cultures for understanding perinatal and women's health (82-84, 96, 106, 107). Two Inuit research partners (EP and PS) facilitated mapping sessions on three aspects of Inuit community-based childbirth with five stakeholder groups (described below). Following a standard procedure for FCM in participatory research (80), facilitators invited participants to share their perspectives on the topics and drew the cognitive maps on paper according to participants' directions. Sessions took place in English and Inuktitut with one facilitator immediately drawing the maps and another recording fieldnotes in English. In many settings, participants indicate the strength of the links between concepts in the maps (for example on a 1 to 5 scale). Previous cognitive mapping research in Nunavik demonstrated, however, Inuit did not feel comfortable with this step in the mapping process (82). We therefore opted for an alternative weighting strategy.

Used in previous mapping with Inuit from Nunavik (108), this procedure derived from Harris' discourse analysis (3) is an operator-independent alternative when participant-weighted maps are not available (2). Harris' original approach used frequency of morphemes (a word, part of a word or a series of words with irreducible meanings) to determine their meaning in the discourse. Following the same principle, we used the frequency of relationships in a set of maps to determine their relative weight across all the maps (2).

We began by digitizing the hand-written maps using yEd (109). The first author (HS) then created a list of standardized names for all factors (nodes) with similar meanings, which EP and PS reviewed and modified. Available in the FCM module of CIETmap 2.2, fuzzy transitive closure (85) then restructured each map as a knowledge network, identifying the maximum influence of each node on the others across all direct relationships and indirect walks (succession of relationships between nodes). We counted the number of times a relationship appeared across all transitive closure maps. The weight of each relationship equalled its frequency divided by the maximum frequency across all the relationships. Weights closer to 1 indicate more frequent and therefore more influential relationships and values closer to 0 the less influential ones.

Over several iterations, HS, EP and PS developed categories to group standardized factors on the maps into a smaller number of categories using inductive thematic analysis (87). They then condensed the individual category maps into a single category map per stakeholder group. To calculate the cumulative influence of each category-level relationship, we combined the factor-

level weights and divided them by the maximum value of all summations. Values closer to 1 indicate the strongest cumulative influence and those closer to 0 are weaker. In the category-level maps, we calculated the outdegree centrality (81) for each category (the sum of the absolute value of its outgoing arrows) to indicate its relative importance as a perceived protector for perinatal family wellness, birth in a good way in Nunavik, and continued community birthing. We validated the category-level maps through member checking sessions with five individuals from the mapping sessions.

PARTICIPANTS

Participants came from six stakeholder groups: Inuit youth ages 14-17, adult men, adult women, and Elders, as well as Inuit and non-Inuit perinatal service providers. The latter participant group included nurses, midwives, student midwives, perinatal community health workers and administrators in the regional health authority. We sought balanced representation across the groups on both coasts to the greatest extent possible, with sessions taking place in 10 of the 14 communities (six on Hudson, four on Ungava) in smaller, mid-size and larger communities (population ranges <500, 500-1000 and >1000 respectively). The project received research ethics approval from McGill University Faculty of Medicine IRB and the Inuulitsivik Health Centre.

3. RESULTS

72 participants (16 men, 23 women, 16 perinatal care providers and 17 youth (boys and girls ages 14-17)) created a total of 54 maps on three separate topics: (1) giving birth in a good way in Nunavik (24 maps), (2) supporting perinatal maternal and family wellness (6 maps), and (3) supporting community-based birth in Nunavik (24 maps). Inuit adults (18 years and over) and their perinatal care providers created maps on topics #1 and #3, while youth ages 14-17 created maps on topic #2. Table 1 presents the characteristics of participants. Deliberately conceptually similar to the adult mapping on *giving birth in a good way in Nunavik*, the cognitive mapping with youth on *supporting perinatal maternal and family wellness* aimed to elicit youth-centered perspectives on perinatal wellness in a cohort with no personal experience of childbirth, but who nonetheless may be affected by birthing evacuation policies through pregnant family members.

Table 1. Characteristics of participants (community mapping sessions)

| COMMUNITY PARTICIPANTS | | Women (n=32) | Men (n=24) |
|---|---|---|---|
| **Age (years)** | 14-17 | 9 (28.1%) | 8 (33.3%) |
| | 18-35 | 13 (40.6%) | 7 (29.2%) |
| | >35 | 5 (15.6%) | 7 (29.2%) |
| | Elder* | 5 (15.6%) | 2 (8.3%) |
| **Place of residence (Coast)** | Hudson | 19 (59.4%) | 12 (50.0%) |
| | Ungava | 13 (40.6%) | 12 (50.0%) |
| **Community size (population)** | <500 | 5 (15.6%) | 1 (4.2%) |
| | 500-1000 | 12 (37.5%) | 11 (45.8%) |
| | >1000 | 15 (46.9%) | 12 (50.0%) |
| **Birthing center in community of residence** | Yes | 15 (46.9%) | 12 (50.0%) |

| | | Women (n=23) | Men (n=16) |
|---|---|---|---|
| **Number of children** | 0 | 0 (0.0%) | 2 (12.5%) |
| *(Excluding youth participants)* | 1 to 5 | 19 (82.6%) | 9 (56.3%) |
| | >5 | 3 (13.0%) | 3 (18.8%) |
| | Missing/Unknown | 1 (4.3%) | 2 (12.5%) |
| **Experience of Nunavik-based childbirth** | Yes | 16 (69.6%) | 7 (43.8%) |
| *(Excluding youth participants)* | Missing/Unknown | 2 (8.7%) | 2 (12.5%) |
| **Experience of extra-regional childbirth evacuation** | Yes | 17 (73.9%) | 7 (50.0%) |
| *(Excluding youth participants)* | Missing/Unknown | 2 (8.7%) | 2 (12.5%) |
| **Location of extra-regional childbirth** | Montreal | 13 (76.5%) | 5 (71.4%) |
| | Moose Factory | 3 (17.6%) | 1 (14.3%) |
| | Iqaluit | 1 (5.9%) | 1 (14.3%) |
| | Ottawa | 1 (5.9%) | 0 (0.0%) |
| | Fort Gros | 1 (5.9%) | 0 (0.0%) |
| | Val D'Or | 1 (5.9%) | 0 (0.0%) |

| PERINATAL SERVICE PROVIDERS | Hudson (n=9) | Ungava (n=7) |
|---|---|---|
| **Midwives** | 4 (44.4%) | 3 (42.9%) |
| Inuit | 4 (100%) | 2 (66.6%) |
| Non-Inuit | 0 (0.0%) | 1 (33.3%) |

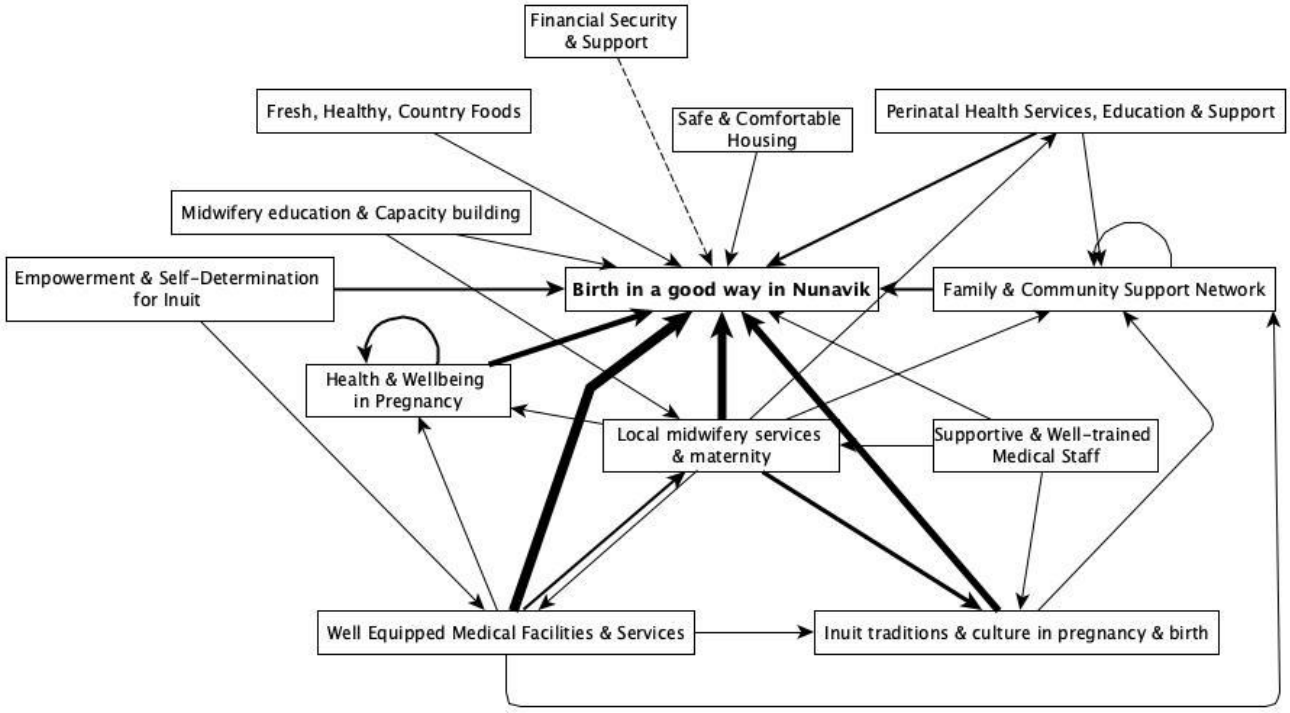
| | | |
|---|---|---|
| **Perinatal Community Health Workers** | 1 (11.1%) | 2 (28.6%) |
| Inuit | 1 (100%) | 1 (50.0%) |
| Non-Inuit | 0 (0.0%) | 1 (50.0%) |
| **Nurses** | 3 (33.3%) | 2 (28.6%) |
| **Manager** | 1 (11.1%) | 0 (0.0%) |

***** *Among Inuit in Nunavik, Elder is defined as a traditional knowledge keeper. An Elder's age has no bearing on their title as such.*

3.1 Perspectives on birthing in a good way in Nunavik

Over 24 sessions, seven Inuit men, nine Inuit women, and nine local perinatal care providers (Inuit and non-Inuit) illustrated their visions for birth in a good way in Nunavik. Most sessions took place with participants individually. The question "what do Inuit need in order to give birth in a good way in Nunavik?" guided the sessions. Participants reported 68 unique concepts across all maps that we grouped into 13 categories. As a graphical display of all 86 unique relationships in the category map is visually difficult to grasp, Figure 1 shows a simplified map of all categories and relationships with weights of 0.19 or more (only one category had a weight <0.19, indicated with a dotted edge). We selected 0.19 as the cut-off value that offers the most comprehensive representation of participants' visions without compromising visual clarity. A pattern matching table (Table 2) offers a comparison between Inuit (community members and providers) and non-Inuit providers visions. A complete category map (Figure 1a) and adjacency matrix (Table 1a) of all relationship weights are included in Appendix 1. Below, we describe the five most influential categories related to giving birth in a good way in Nunavik.

Figure 1. Category map summarizing community visions of giving birth in a good way in Nunavik. Relationships with a cumulative influence of ≥0.19 are indicated with thicker edges (arrows) showing stronger relationships. Dotted edge indicates a category influence <0.19.




Across all maps, *well-equipped medical facilities and services* had the strongest cumulative influence on birth in a good way in Nunavik (1.00 for Inuit, 0.63 for non-Inuit). Participants noted a need for more medical facilities in the region, particularly hospitals with surgical capacity. They advocated for greater access to up-to-date medical equipment (blood transfusion, ultrasound, and medical laboratories), as well as access to a full range of medicines and therapies comparable to those available in southern Quebec. Other factors in this category included more perinatal medical staff (physicians, nurses, medical technicians, and Inuktitut interpreters), medical transportation exclusive for pregnant women, and better lodging facilities for intra-region evacuations for childbirth (e.g., from villages without midwifery service to one of the four villages with maternities).

*Local midwifery services and maternities* run by Inuit midwives had the second strongest influence overall. This category had the strongest influence on all other categories in the map (outdegree centrality 1.0), with participants linking Inuit midwives to multiple benefits at individual, family, and community levels. They regarded Inuit midwifery as a protective factor

for healthy maternal behaviors in pregnancy including reduced substance use, greater physical activity, and increased consumption of country foods. Family-level impacts included greater family presence and support for women during pregnancy and birth, and reduced financial burdens associated with medical evacuation to southern Quebec. Participants also identified positive community-level impacts of midwifery, such as increased practice of Inuit perinatal traditions and greater investment in local perinatal health services and facilities.

Table 2. Pattern matching table of factors contributing to giving birth in a good way in Nunavik (a weight of 1 indicates the strongest cumulative influence on birth in a good way in Nunavik)

| **Category** | **Total** | **Inuit** (17 maps) | **Non-Inuit Providers** (5 maps) |
|---|---|---|---|
| Well Equipped Medical Facilities & Services | 1.00 | 1.00 | 0.63 |
| Local midwifery services & maternity | 0.95 | 0.78 | 1.00 |
| Inuit traditions & culture in pregnancy & birth | 0.81 | 0.78 | 0.88 |
| Health & Wellbeing in Pregnancy | 0.71 | 0.72 | 0.25 |
| Perinatal Health Services, Education & Support | 0.48 | 0.44 | 0.50 |
| Family & Community Support Network | 0.48 | 0.50 | 0.38 |
| Empowerment & Self-Determination for Inuit | 0.38 | 0.28 | 0.38 |
| Supportive & Well-trained Medical Staff | 0.29 | 0.17 | 0.50 |
| Safe & Comfortable Housing | 0.24 | 0.22 | 0.13 |
| Fresh, Healthy, Country Foods | 0.24 | 0.28 | 0.00 |
| Midwifery education & Capacity building | 0.19 | 0.11 | 0.38 |
| Financial Security & Support | 0.05 | 0.06 | 0.00 |

*Inuit perinatal traditions* had the third strongest cumulative influence on birth in a good way. This category included Elder's guidance throughout the perinatal period along with spiritual and religious counselling. Participants advocated for non-medicalized homebirth in the traditional way where possible, or birth at the local maternity. They highlighted the importance of being able to birth in Inuktitut, for it positively contributes to a sense of pride in Inuit identity, advocacy for traditional homebirth, and participation in family and community celebrations postpartum.

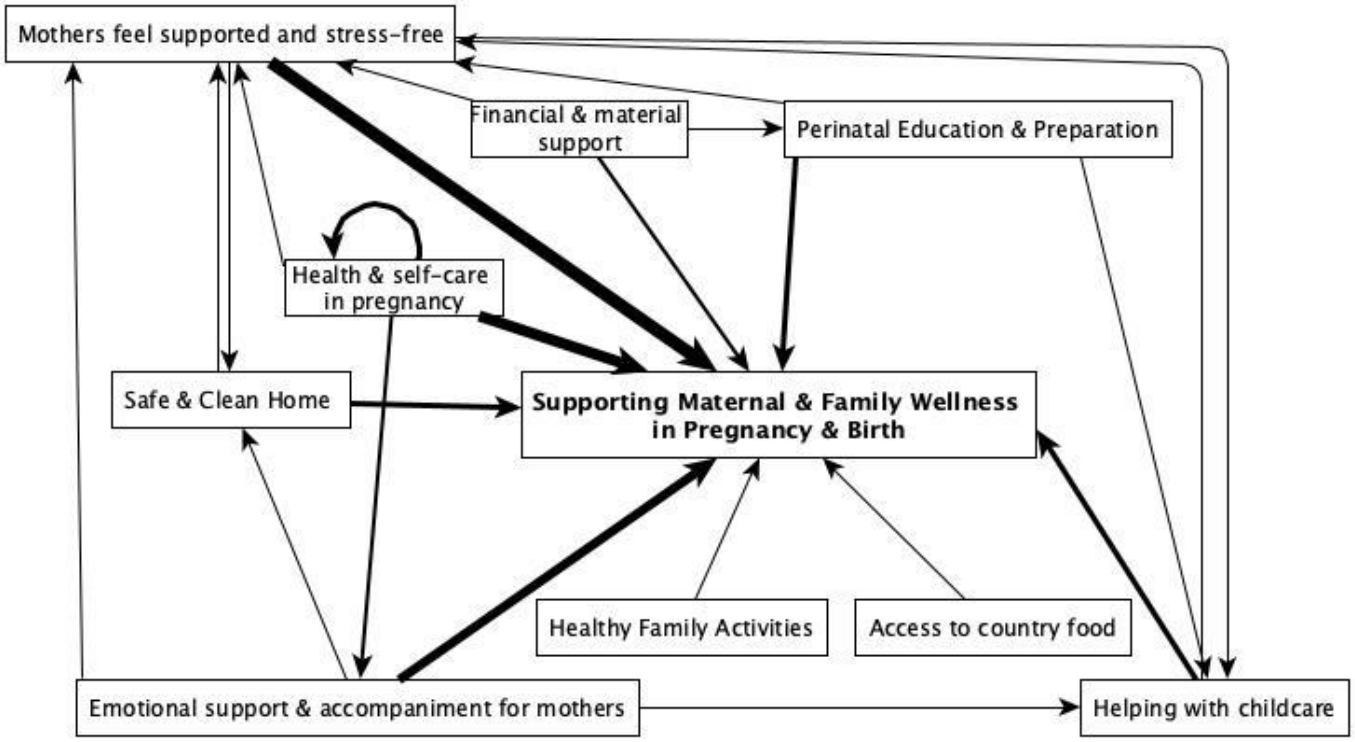
The category we labelled *Health & wellbeing in pregnancy* had the fourth strongest influence overall. It included health-promoting maternal behaviors such as reducing substance use in pregnancy, participating in outdoor physical activities, and consuming a diet of healthy and traditional country foods. Good mental health, adhering to the advice of perinatal care providers, and 'trying to be a role model during pregnancy' were also identified as protective factors of health and wellbeing for expecting mothers.

Two categories *Family & community support networks* and *Perinatal health services, education & support* were the fifth most influential categories across all maps. Concepts in the former category included having wellness and strong social ties in the community, receiving support from friends and family during the perinatal period, and accompaniment by family members (including older children) for intra-regional travel for medical appointments and childbirth. In the latter category, participants frequently mentioned the protective role of regional perinatal and early childhood integrated services (SIPPE) in supporting birth in a good way in Nunavik. These benefits included counselling on healthy lifestyle during pregnancy, parenting and childbirth classes, nutritional education, and food coupons. They advocated for increased continuity of care and expanded postpartum support, sex education, and counselling for perinatal loss. Participants also identified a bidirectional link between both categories: they observed that family support during pregnancy increases women's use of perinatal services. In turn, SIPPE services strengthen family support and involvement during pregnancy and are protective against family violence.

3.2 Youth perspectives on maternal and family wellness in the perinatal period

Six mapping sessions engaged 16 youth ages 14-17 years in groups of 2 to 4 persons, to share their visions for supporting maternal and family wellness during the perinatal period. The question "what do women and their families need in order to feel well during pregnancy and childbirth?" guided the sessions. Participants shared 26 unique factors that we condensed into 11 categories. Like Figure 1 in the previous section, Figure 2 shows a reduced category map with relationships scoring 0.14 or greater indicated for visual clarity. A complete category map (Figure 2a). and adjacency matrix (Table 1b) are found in Appendix 1

Figure 2. Category map summarizing youth visions of maternal and family wellness during pregnancy and birth. Relationships with a cumulative influence of 0.14 are indicated with thicker edges (arrows) showing stronger relationships.




In youth visions of maternal and family wellbeing during pregnancy and childbirth, the category *Mothers are supported and stress-free* had the strongest influence across all maps. Factors in this category included helping women with household chores such as cooking, cleaning, and grocery shopping. Concepts such as "being her right-hand man" and "helping her out" capture the need for general support from family and friends, while the importance of nurturing and taking care of mothers is illustrated in factors such as "treating her well" and "feeding her".

*Maternal health and self-care in pregnancy* had the second strongest influence overall. As in maps on birth in a good way in Nunavik, protective concepts in this category included engaging in healthy behaviors such as eating a balanced diet of healthy and country foods and ensuring sufficient water intake. Protective concepts included abstaining from drugs and alcohol and avoiding reckless driving.

Offering *Emotional support and accompaniment for mothers* was the third most influential category across all maps. Concepts such as "following mother", "go with her to prenatal visits"

and “be beside her” illustrate the importance of accompaniment and support throughout the perinatal period. Youth felt that maternal avoidance of substance use during pregnancy was positively associated with emotional support and the presence of family members throughout the perinatal period.

Three categories, *Perinatal education, and preparation, Helping with childcare,* and *Safe and clean home* were the fourth most influential categories with weights of 0.36. Perinatal education and preparation included concepts such as prenatal classes, preparing for the baby’s arrival (clothing, nursery room, etc.), and breastfeeding support. This category was also positively associated with the categories *helping with childcare* (0.14) and *mother is supported and stress-free* (0.36), as family member’s involvement in preparing for the baby’s arrival leads to greater assistance with childcare and household chores postpartum. Lastly, youth also identified having a clean and smoke-free home, free from domestic violence and stress as a protective factor of maternal and family wellness.

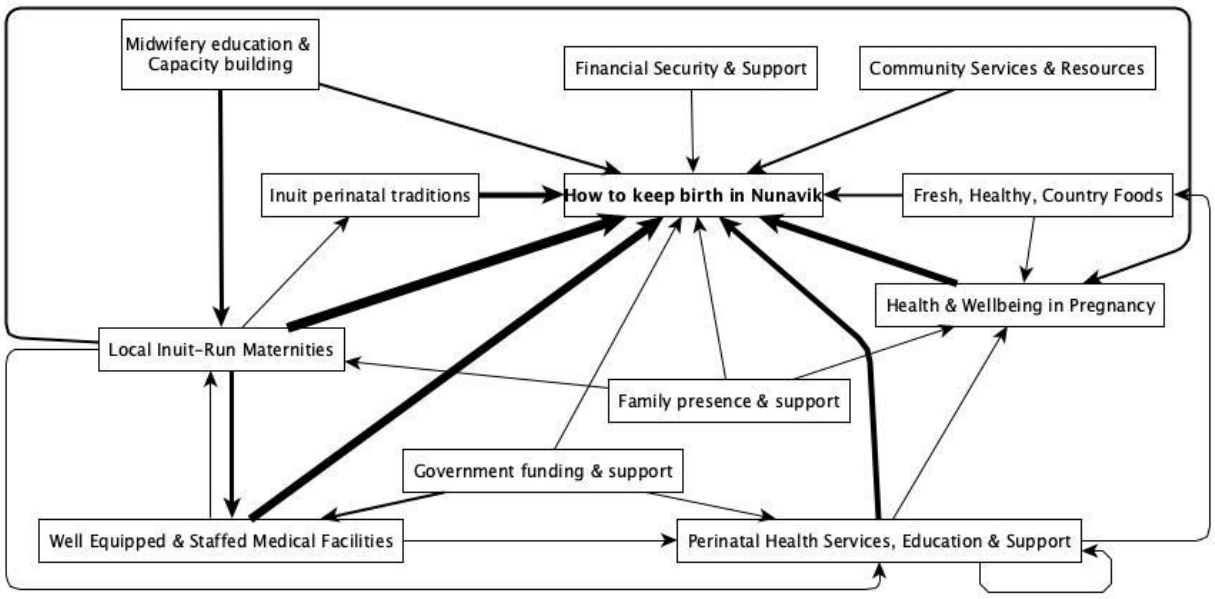
3.3 Pathways for continued community birthing

A series of 24 mapping sessions engaged seven men, fourteen women, and seven perinatal providers in illustrating their visions for how to keep births in the communities. Most sessions took place with participants individually. The question “what is needed for childbirth to happen/continue happening in the community?” guided the sessions. Participants reported 50 unique concepts, which we grouped into 12 categories. As the complete category map contains 66 unique relationships, Figure 3 depicts a reduced category map for visual clarity, with relationships of 0.17 or greater included. In this map, we selected 0.17 as the cut-off value that offers the most comprehensive representation of participants’ visions without compromising visual clarity. A complete category map (Figure 3a) and adjacency matrix (Table 1c) are found in Appendix 1.

Five categories with the strongest cumulative influence on keeping birth in the communities echo the visions for giving birth in a good way in Nunavik. These are: (1) *Local Inuit-run maternities*, (2) *Well equipped & staffed medical facilities*, (3) *Health & wellbeing in pregnancy*, (4) *Inuit traditions in pregnancy & birth*, and (5) *Perinatal health services, education & support.* A coastal comparison of these recommendations (Hudson versus Ungava) illustrates important

shared and diverging priorities among the communities. A pattern matching table (Table 3) presents their respective category weights.

Figure 3. Category map summarizing community visions for how to keep childbirth in Nunavik. Relationships with a cumulative influence of 0.17 are indicated with thicker edges (arrows) showing stronger relationships.




Highlighting the need for expanded perinatal health services in the region, the categories we labeled as *Local Inuit-run maternities* and *Well equipped & staffed medical facilities* featured within the top three factors for keeping births in the communities on both coasts. As in the category map on birth in a good way in Nunavik, the category *Local Inuit-run maternities* had the strongest influence on all other categories in the map (outdegree centrality 1.0). Participants noted that the presence of Inuit-run birthing centers positively influences resource allocation for perinatal health programs, staffing and running medical facilities, the practice of Inuit perinatal traditions, and maternal-infant health profiles. Lastly, participants felt that Inuit midwifery had a positive impact on various C*ommunity services and resources* such as community housing and country food freezers, family houses, and health education in school curriculums.

Table 3. Pattern matching table of factors contributing to keeping childbirth in Nunavik (a weight of 1 indicates the strongest influence on keeping childbirth in Nunavik)

| Category | Total | Hudson (14 maps) | Ungava (9 maps) |
|---|---|---|---|
| Local Inuit-Run Maternities | 1.00 | 0.87 | 1.00 |
| Well Equipped & Staffed Medical Facilities | 0.97 | 1.00 | 0.60 |
| Health & Wellbeing in Pregnancy | 0.80 | 0.87 | 0.40 |
| Inuit traditions in pregnancy & birth | 0.43 | 0.22 | 0.80 |
| Perinatal Health Services, Education & Support | 0.37 | 0.39 | 0.20 |
| Fresh, Healthy, Country Foods | 0.33 | 0.30 | 0.30 |
| Community Services & Resources | 0.27 | 0.35 | 0.00 |
| Midwifery education & Capacity building | 0.27 | 0.22 | 0.30 |
| Family presence & support | 0.17 | 0.17 | 0.10 |
| Government funding & support | 0.17 | 0.17 | 0.10 |
| Financial Security & Support | 0.10 | 0.00 | 0.10 |

Two categories, *Inuit traditions in pregnancy & birth and Perinatal health services, education & support* illustrate the contrasting priorities of communities located on the Hudson versus Ungava coasts. The former category included concepts such as Elder's wisdom, Inuit doula support, home birth, the participation of the *arnaqutik* and *sanajik* (the "godparent" or person who cuts the umbilical cord), birth in Inuktitut, and assuming traditional birthing positions. It was the second most influential category for Ungava participants (0.80) and the seventh most important for Hudson participants (0.22). Concepts in the category *Perinatal health services, education & support,* included SIPPE services, regular prenatal care, postpartum home care and continuity of care throughout the perinatal period. This category ranked fourth in cumulative influence among maps made in the Hudson communities and seventh among those living on the Ungava coast.

## DISCUSSION

Through fuzzy cognitive mapping, participants illustrated a comprehensive vision for Inuit maternal and family perinatal wellness, birth in a good way in Nunavik, and pathways for continued community birthing. Collating the knowledge across multiple stakeholder groups - Inuit youth, men, women, elders and Inuit and non-Inuit providers - on the same terms for transparent contrast and compilation brings forth at least three important directions for action. Foremost among them is the foundational role of Inuit midwifery services to an experience of

birth in a good way in Nunavik, and to continued childbirth in the region. Participants noted many benefits associated with Indigenous midwifery found elsewhere in the literature (37, 106, 110). Among them are a positive experience of childbirth (45, 111) , numerous maternal-child health benefits (13, 70, 93, 111), strong family and community connections (70, 93) and traditional Inuit perinatal practices (63, 112).

Second, keeping birthing in the communities and a positive experience of community birthing rests heavily on the practice of Inuit perinatal traditions. Elders' traditional knowledge, high levels of community support and involvement in childbirth, and the ability to give birth in one's own language are foundational. Our findings reinforce Stonier's (93) point that local birthing is not just about keeping births in the community, but also *reclaiming* Inuit knowledge and community involvement in the process. Although Inuit perinatal traditions scored low among participants on the Hudson coast, this could be explained by the fact that perinatal traditions are already deeply rooted within Inuulitsivik midwifery services (63), with a greater proportion of practicing Inuit midwives than on the Ungava coast (64). Indeed, it is likely that Hudson coast participants consider midwifery services to be inseparable from or synonymous with the practice of Inuit perinatal traditions.

Lastly, echoing local recommendations, local midwifery capacity must be bolstered by well-resourced medical health services in the region along with an integrated network of perinatal and early childhood wellness programs (SIPPE) (64). Inuit youth perspectives illustrate the need for the latter services, reinforcing the well-documented significance of emotional, material, and instrumental support for mothers in the perinatal period (113-115). This was reinforced in the map on birth in a good way in Nunavik, where SIPPE services were a key source of such supports for Inuit families. Finally, participants noted that such resources must be distributed equitably throughout the region and will require the renegotiation of Inuit authority and governance over health and social services - a foundational determinant of Inuit health (52).

We recognize our project has some important limitations. While mapping sessions took place in English and Inuktitut, EP and PS translated the final maps into English - potentially limiting the full interpretation of some concepts. Ideally, in participatory research, FCM participants contribute to thematic analysis and identification of broader categories. Logistical challenges meant this was not possible, although the Inuit facilitators did join the thematic analysis.

Appendix 2 lists the factors included in each category for transparency. A well-recognized limitation of fuzzy cognitive mapping (80), as with most non-narrative research techniques, is the emerging evidence represents a snapshot of community visions in a culture and territory experiencing rapid change. Although the approach to inclusive equitable consultation almost certainly has wider application, our project is limited to Nunavik and cannot offer comparisons with other communities in Inuit Nunangat or elsewhere in Canada.

## CONCLUSION

Fuzzy cognitive mapping (FCM) was useful in engaging local Nunavik Inuit stakeholders in visioning context-specific pathways for continued community birthing and enhanced maternal and family perinatal wellness. Bridging gaps across cultural, educational, and linguistic differences, FCM revealed important parameters for continued birthing in Nunavik, highlighting key influential factors and pathways for change. Echoing nationally recognized best practices for returning birth to Indigenous communities (104, 112), Inuit-led midwifery was at the center of community and care provider perspectives. Inuit traditions are the foundation for experiencing birth in a good way in Nunavik and keeping childbirth in the communities. Well-equipped medical facilities and integration with locally adapted perinatal health services provide key support.

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REFERENCES


1. Smylie J, O'Brien K, Beaudoin E, et al. Long-distance travel for birthing among Indigenous and non-Indigenous pregnant people in Canada. *CMAJ* 2021; **193**(25): E948-E55.
2. Van Wagner V, Osepchook C, Harney E, Crosbie C, Tulugak M. Remote midwifery in Nunavik, Quebec, Canada: outcomes of perinatal care for the Inuulitsivik health centre, 2000-2007. *Birth* 2012; **39**(3): 230-7.
3. Epoo B, Stonier J, Van Wagner V, Harney E. Learning midwifery in Nunavik: community-based education for Inuit midwives. *Pimatisiwin* 2012; **10**(3): 283-99.
4. Van Wagner V, Epoo B, Nastapoka J, Harney E. Reclaiming birth, health, and community: midwifery in the Inuit villages of Nunavik, Canada. *J Midwifery Womens Health* 2007; **52**(4): 384-91.
5. Simonet F, Wilkins R, Labranche E, et al. Primary birthing attendants and birth outcomes in remote Inuit communities-a natural" experiment" in Nunavik, Canada. *Journal of Epidemiology & Community Health* 2009.
6. Gagnon M-JG, Dejnane; Girard, Yoan; Paré, Monique; Pernet, Fabien ; Watkins, Jennifer Regional Reference Framework (2015-2023): For Birth Homes and Midwifery in Nunavik. In: Practices DoIVa, editor.; 2015. p. 58.
7. Smylie J, Kirst M, McShane K, Firestone M, Wolfe S, O'Campo P. Understanding the role of Indigenous community participation in Indigenous prenatal and infant-toddler health promotion programs in Canada: A realist review. *Social Science & Medicine* 2016; **150**: 128-43.
8. Couchie C. A report on best practices for returning birth to rural and remote aboriginal communities. *Journal of Obstetrics and Gynaecology Canada: JOGC= Journal D'obstetrique et Gynecologie du Canada: JOGC* 2007; **29**(3): 250-4.
9. Canada S. Aboriginal Population Profile, 2016 Census Nunavik [Inuit region], Quebec. Government of Canada; 2019.
10. Gray SA, Zanre E, Gray SR. Fuzzy cognitive maps as representations of mental models and group beliefs. Fuzzy cognitive maps for applied sciences and engineering: From fundamentals to extensions and learning algorithms: Springer; 2013: 29-48.
11. Giles BG, Findlay CS, Haas G, LaFrance B, Laughing W, Pembleton S. Integrating conventional science and aboriginal perspectives on diabetes using fuzzy cognitive maps. *Social science & medicine* 2007; **64**(3): 562-76.
12. Belaid L, Atim P, Atim E, et al. Communities and service providers address access to perinatal care in postconflict Northern Uganda: socialising evidence for participatory action. *Family Medicine and Community Health* 2021; **9**(2).
13. Belaid L, Atim P, Ochola E, et al. Community views on short birth interval in Northern Uganda: a participatory grounded theory. *Reproductive Health* 2021; **18**(1): 1-11.
14. Tratt E, Sarmiento I, Gamelin R, Nayoumealuk J, Andersson N, Brassard P. Fuzzy cognitive mapping with Inuit women: what needs to change to improve cervical cancer screening in Nunavik, northern Quebec? *BMC health services research* 2020; **20**: 1-6.
15. Dion A, Nakajima A, McGee A, Andersson N. How adolescent mothers interpret and prioritize evidence about perinatal child protection involvement: Participatory contextualization of published evidence. *Child and Adolescent Social Work Journal* 2022; **39**(6): 785-803.
16. Sarmiento I, Paredes-Solís S, Loutfi D, Dion A, Cockcroft A, Andersson N. Fuzzy cognitive mapping and soft models of indigenous knowledge on maternal health in Guerrero, Mexico. *BMC medical research methodology* 2020; **20**(1): 1-16.

17. Sarmiento I, Ansari U, Omer K, et al. Causes of short birth interval (kunika) in Bauchi State, Nigeria: systematizing local knowledge with fuzzy cognitive mapping. *Reproductive health* 2021; **18**: 1-18.
18. Andersson N, Silver H. Fuzzy cognitive mapping: an old tool with new uses in nursing research. *Journal of advanced nursing* 2019; **75**(12): 3823-30.
19. Silver H, Tukalak S, Sarmiento I, et al. Giving birth in a good way when it must take place away from home: Participatory research into visions of Inuit families and their Montreal-based medical providers. *Birth* 2023.
20. Harris ZS, Harris ZS. Discourse analysis: Springer; 1970.
21. Sarmiento I, Cockcroft A, Dion A, et al. Combining Conceptual Frameworks on Maternal Health in Indigenous Communities—Fuzzy Cognitive Mapping Using Participant and Operator-independent Weighting. *Field Methods* 2022; **34**(3): 223-39.
22. yWorks. yEd. 3.23.2 ed; 2017.
23. Niesink P, Poulin K, Šajna M. Computing transitive closure of bipolar weighted digraphs. *Discrete Applied Mathematics* 2013; **161**(1-2): 217-43.
24. Braun V, Clarke V. Reflecting on reflexive thematic analysis. *Qualitative research in sport, exercise and health* 2019; **11**(4): 589-97.
25. Özesmi U, Özesmi SL. Ecological models based on people's knowledge: a multi-step fuzzy cognitive mapping approach. *Ecological modelling* 2004; **176**(1-2): 43-64.
26. Corcoran PM, Catling C, Homer CS. Models of midwifery care for Indigenous women and babies: a meta-synthesis. *Women and Birth* 2017; **30**(1): 77-86.
27. Homer CS. Models of maternity care: evidence for midwifery continuity of care. *Medical Journal of Australia* 2016; **205**(8): 370-4.
28. McCalman P, Forster D, Springall T, Newton M, McLardie-Hore F, McLachlan H. Exploring satisfaction among women having a First Nations baby at one of three maternity hospitals offering culturally specific continuity of midwife care in Victoria, Australia: A cross-sectional survey. *Women and Birth* 2023.
29. Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women. *Cochrane database of systematic reviews* 2016; (4).
30. Stonier J. The innulitsivik maternity. *Childbirth in the Canadian North: Epidemiological, clinical and cultural perspectives* 1990: 61-74.
31. Health Council of C. Understanding and improving aboriginal maternal and child health in Canada : compendium of promising practices. Toronto, Ont.: Health Council of Canada; 2011.
32. Sufredini F, Catling C, Zugai J, Chang S. The effects of social support on depression and anxiety in the perinatal period: A mixed-methods systematic review. *Journal of Affective Disorders* 2022.
33. Nelson C, Lawford KM, Otterman V, Darling EK. Mental health indicators among pregnant Aboriginal women in Canada: results from the Maternity Experiences Survey. *Health Promotion & Chronic Disease Prevention in Canada* 2018; **38**.
34. Richmond CA. The social determinants of Inuit health: a focus on social support in the Canadian Arctic. *International journal of circumpolar health* 2009; **68**(5): 471-87.
35. Inuit Tapiriit K. Social determinants of Inuit health in Canada. Ottawa, Ontario: Inuit Tapiriit Kanatami; 2015.

# Chapter 6: Discussion

This dissertation offers my contribution to understanding culturally safe Inuit birth, both in the contexts of childbirth evacuation and community-based birthing in Nunavik. Four chapters explored the subject of culturally safe Inuit childbirth. Below I discuss the findings of the entire thesis.

**Routine childbirth evacuation appears unlikely to close the gap in perinatal outcome disparities among rural and remote Indigenous communities in Canada**.

The scoping review in Chapter 2 systematically assessed more than five decades of research on the factors and outcomes associated with childbirth evacuation among rural and remote Indigenous communities in Canada. In reviewing the evidence on more than 10,000 Indigenous births between 1978-2019, it appears unlikely that routine childbirth evacuation can help to improve the disparities in poorer perinatal outcomes experienced by Indigenous Peoples in Canada. The scoping review illustrates two important features of evacuation that likely contribute to the practice's inability to close the aforementioned gap.

First, is the fact that childbirth evacuation focuses on mitigating the impacts of the inequities in perinatal outcomes experienced by Indigenous Peoples, as opposed to addressing their underlying causes. That is, evacuation does nothing to address the *structural* inequities in social determinants of health that contribute to the poorer perinatal health profiles of Indigenous Peoples. By improving access to specialized health services, evacuation endeavours to mitigate adverse perinatal outcomes. However, it cannot alleviate many of the conditions that contribute to those poor outcomes in the first place, such as poverty, lack of housing, food insecurity, and limited economic opportunities. In fact, the scoping review suggests that routine evacuation further *exacerbates* certain inequities in social determinants of health for Indigenous Peoples, linking the practice with increased poverty and unemployment.

A second likely mechanism that contributes to evacuation's inability to address adverse perinatal outcomes is that removing childbirth from the communities inevitably dispossesses Indigenous Peoples of important protective health determinants such as land, cultural continuity, and self-determination. The scoping review identified land as an important determinant of health, linking

the removal of childbirth from traditional territories with the erosion of Indigenous identities and ties to the collective. This finding lends support to the mounting calls for Indigenous land to be considered a determinant of Indigenous Peoples health (116). As the Pan American Health Organization (PAHO) notes, many Indigenous Peoples have "powerful relationships and symbiosis with their land and the ecology that has traditionally culturally defined and sustained them" (117 pp.74). PAHO cautions that the exclusion of Indigenous Peoples from their land threatens their health and health equity (117).

Emerging evidence points to cultural continuity as a significant determinant of Indigenous Peoples' Health (51). As illustrated in the scoping review, evacuation significantly challenges cultural continuity, interrupting the intergenerational transmission of traditional knowledge surrounding pregnancy and childbirth, and widening the chasm between elders and future knowledge keepers. Moreover, by relocating birth from traditional Indigenous territories to a colonial medical institutional setting, evacuation significantly hinders and, in some cases, precludes important ceremonies and practices of spirituality, which are integral markers of cultural continuity (51).

Lastly, the scoping review identified several ways in which childbirth evacuation impedes Indigenous People's self-determination at the individual, family, and community levels. According to the National Collaborating Centre for Indigenous Health (NCCIH), "self-determination has been cited as the most important determinant of health among Aboriginal peoples" (118 pp.24). Taken together, these two features of childbirth evacuation – an inability to address the structural inequities in social determinants of health while simultaneously stripping indigenous Peoples of unique protective health determinants – indicate it is unlikely to close the gap in perinatal outcome disparities experienced by rural and remote Indigenous Peoples in Canada. Alternative strategies are required to address the perinatal service needs of rural and remote Indigenous communities, and these are discussed in the following section.

**Inuit and their perinatal service providers have detailed knowledge of how to birth in a good way both at home and in the context of evacuation**.

Contrasting the findings of the scoping review in Chapter 2, the research described in Chapters 3 and 5 highlights alternative pathways to establishing perinatal services that may improve Inuit experiences of childbirth and potentially close the gap in perinatal outcome disparities. The fuzzy

cognitive mapping (FCM) with Inuit and their perinatal service providers in Nunavik and Montreal indicated that Inuit have detailed and clear knowledge of what it means to birth in a good way, both at home and in the context of evacuation. Interestingly, regardless of where birth takes place, FCM surfaced five shared foundational principles to Inuit birth in a good way for families in Nunavik. I propose that perinatal services grounded in these principles have the potential to support Inuit perinatal wellness, thereby helping to keep childbirth in Nunavik.

*Birth in a good way is midwifery-led*

Across all stakeholder groups, there was unanimous agreement that Inuit-led midwifery services have the capacity to mobilize multiple protective factors to support Inuit to give birth in a good way both in and outside of Nunavik. As the 2014 Lancet Series on Midwifery concluded, "Midwifery can lead to positive health outcomes, especially in settings in which midwifery services are valued and respected, community-based, and integrated effectively into a functioning health system" (119 pp.2). Participant views reinforce this finding and other research on the positive impacts of midwifery care, illustrating a strong link between midwifery and maternal health and wellbeing in pregnancy (68, 119-121). Inuit youth perspectives helped to clarify the association between midwifery and maternal health and wellbeing, pointing to strong social support networks as important intermediary factors.

Extending beyond individual maternal health benefits, FCM participants pointed to the positive impacts of Inuit midwifery on family and social ties in the communities – a finding reported elsewhere (63, 70). They observed that the benefits to the social fabric of communities are especially significant when midwifery services are Inuit-led and integrate traditional Inuit perinatal customs. Lastly, FCM linked the presence of midwifery services with greater investment in community infrastructure and services, indicating that the presence of midwives likely has positive effects extending beyond maternal and family perinatal wellness.

*Birth in a good way is grounded in Inuit traditions and conceptions of health*

Regardless of where childbirth takes place, giving birth in a good way for participants was inseparable from Inuit cultural practices, succinctly described by one Inuk mother as "giving birth the *Inuit* way". This by no means proposes a singular, fixed, or uniform way in which to birth but rather highlights the capacity of childbirth to facilitate cultural continuity and wellness for Inuit in Nunavik, when it is grounded in local knowledge systems and traditions. The link

made by participants between birth in a good way and the ability to birth in Inuktitut illustrates this potential. Echoing research on the connection between Inuit women's ability to speak Inuktitut and the strength of their cultural identity (42), one Inuk participant explained the importance of speaking Inuktitut in childbirth: "Inuktitut is not just what we speak, it's who we are".

Participants also believed that birth in a good way draws on the guidance and wisdom of elders, securing the intergenerational continuity of traditional knowledge and social roles in pregnancy and childbirth. They noted that birth in a good way, health, and wellness rest on the practice of traditional crafts, land-based activities, and consumption of country foods. Participants' perception of the centrality of Inuit cultural practices to birth in a good way lends support to other research linking cultural continuity with Indigenous Peoples health and wellness (42, 52, 122). Additionally, their perspectives reinforce the repeated recommendations in several governmental reports to recognize, affirm, and respect Indigenous traditional knowledge systems (123-125). This is most succinctly outlined in the Truth and Reconciliation Commission's 22nd call to action, which implores "those who can effect change within the Canadian health-care system to recognize the value of Aboriginal healing practices and use them in the treatment of Aboriginal patients in collaboration with Aboriginal healers and Elders where requested by Aboriginal patients" (125 pp.3). The inclusion of Inuit cultural traditions within perinatal services, however, must coincide with a transfer of authority over birthing to Inuit communities, for as Douglas (126) cautions: "If token rituals are allowed by biomedical authorities in specific instances while overall authority over childbirth remains out of the hands of the Inuit community, then nothing is resolved; the issue is not one of specific practices, but of who controls birth - the Inuit or biomedicine." (pp.183).

*Birth in a good way transfers back power to Inuit women, families, and communities*

FCM in Chapters 3 and 5 indicated that self-determination in childbirth was key to giving birth in a good way, with participants identifying pathways for Inuit to have authority over childbirth both in Nunavik and in the context of evacuation. Echoing research conducted in other regions of Inuit Nunangat (126), birth in a good way for Inuit from Nunavik means communities decide *where* and *how* birth happens. Contrary to evacuation's legacy of disempowerment, coercion, and dispossession illustrated in the scoping review in Chapter 2, the FCM with Inuit and service

providers indicate that childbirth evacuation need not inherently be experienced as such. The research described in Chapter 3 illustrates several pathways to support Inuit self-determination in childbirth in the context of evacuation. Foremost among them was the top priority recommendation by Inuit evacuees for a family transit house: a family-centered space, separate from the medical establishment in which families can be self-determining with regards to activities of daily life. Echoing the WHO's *intrapartum guidelines for a positive experience of childbirth,* other key FCM recommendations that promote self-determination included perinatal services that are Inuit women-centered, facilitate informed choice, and encourage family participation in childbirth (35).

As an analysis of the Rankin Inlet community birthing centre in Nunavut observes, community-based birth is not inherently a panacea for adverse perinatal outcomes (126). Nor is it necessarily synonymous with Inuit authority over childbirth or the revitalization of traditional birthing models (126). Largely attributing the centre's limited success to its lack of Inuit ownership, the analysis likened it to "a southern institution located in Nunavut. It has never become an Inuit institution, nor is it an integral part of the Inuit community" (17 pp.184). The analysis further concluded that community authority "remains the essential characteristic of Inuit childbirth… symbolized by communal control over birthing practices, birthing rituals and place of birth" (pp.183). The findings in Chapter 5 support this distinction, with participants emphasizing the need for greater investment in *Inuit* midwifery capacity and community authority over resource allocation for health services and facilities. For some participants this would necessarily require macro-level structural changes including the renegotiation of Inuit land claim agreements. These recommendations are supported by Inuit Tapiriit Kanatami's 2014 report on Inuit social determinants of health, which concluded that a "key action for future success is the support of increasing levels of self-determination in Inuit regions" (52 pp.6). Furthermore, the visions described in Chapters 3 and 5 chart a course towards the decolonization of Inuit childbirth, for as emergency room pediatrician Dr. Shaheen-Hussain defines it, "Ultimately, a decolonization approach means that Indigenous Peoples are self-determining with respect to their health and healing systems, including to what extent they engage with the dominant medical paradigm" (55 pp.265).

*Birth in a good way requires settler health service providers and institutions to work in solidarity with Inuit communities.*

The introductory chapter of the thesis pointed to extensive scholarship advocating for settler service providers and medical institutions to work in solidarity with Indigenous Peoples to redesign policies and practices that contribute to inequities in Indigenous People's health. The need for solidarity is aptly described by Dr Shaheen-Hussain: "Decolonization is a one-way street with two lanes. Those of us who are not the original inhabitants of this land need to get in our lane to support Indigenous resistance and resurgence" (55 pp.275). Indeed, according to FCM participants in my study, the active engagement and collaboration of health institutions and service providers was foundational to Inuit giving birth in a good way, both in Nunavik and in the context of childbirth evacuation. Chapters 3 - 5 of my dissertation highlight the need for and potential impact of culturally adapted perinatal services offered by trustworthy, supportive, and collaborative non-Inuit perinatal service providers. FCM participants' definitions of "good medical staff" included service providers that offered "safe" and "respectful" care, grounded in informed consent, and encouraging patient and family participation in care. Moreover, they believed that these competencies can be readily achieved through recurring Inuit-led cultural safety trainings. The preliminary findings on the impacts of the Inuit-led cultural safety training in Chapter 4 seem to support this view, demonstrating a positive influence on service providers' knowledge and actions.

Participant recommendations for the education of service providers, echo the Truth and Reconciliation Commission's calls to "provide cultural competency training for all health-care professionals" along with "skills-based training in intercultural competency, conflict resolution, human rights, and anti-racism" (125 pp.3) within medical and health professional curriculums. The need for culturally adapted and Inuit led services, both in Nunavik and in the context of evacuation also reinforces the recommendations of the 2019 Viens public inquiry commission into the relations between Indigenous Peoples and public services in Quebec. Among the commission's 33 calls to action for changes in health and social services for Indigenous Peoples in Quebec, the report advocates for "health and social services network institutions to set up services and programs based on cultural safety principles developed for Indigenous peoples and in cooperation with them" (124 p.480). Chapter 4 of my thesis illustrated one possible pathway

to answering these calls to action, describing the implementation and evaluation of co-designed cultural safety interventions with Indigenous stakeholders.

*Birth in a good way requires equity in social health determinants for Inuit.*

Giving birth in a good way requires governments to continue working towards equity in social determinants of health for Inuit. As highlighted in the introductory chapter of my thesis, the inequities in social determinants of health experienced by Inuit and other Indigenous Peoples in Canada are well known (52, 53). Fuzzy cognitive mapping (FCM) with Inuit and service providers highlighted persistent inequities in social determinants of Inuit health that must be addressed for Inuit to give birth in a good way and keep childbirth in the communities. According to participants, severe inequities in access to local medical services and treatments along with basic infrastructure and service inequities in the communities remain a significant barrier to birth in a good way in Nunavik and continued community-based childbirth. While the inequities are most severe for those birthing in Nunavik, FCM participants observed many persistent inequities both in the context of evacuation and community-based childbirth. These included lack of safe and comfortable housing, financial insecurity, limited perinatal support services and education, along with inadequate access to nutritious food.

Furthermore, investment in equitable medical services and well-staffed facilities in Nunavik is likely to maximize the positive impacts of local Inuit midwifery on perinatal health. As the 2014 Lancet Series on Midwifery concluded, midwifery services were "the most effective when integrated into the health system in the context of effective teamwork, referral mechanisms, and sufficient resource (121 pp.1130). Considering that midwifery in Nunavik has secured significant benefits to the communities in the context of limited resources, the positive impacts of midwifery services supported by sufficient resources are highly promising. Lastly, echoing the calls to action in the Truth and Reconciliation Commission and Viens Public Inquiry Commission, FCM participants acknowledged that all levels of government must do their part to ensure equitable services and living conditions for Inuit, both within and outside of Nunavik.

In summary, fuzzy cognitive mapping with Inuit and their perinatal service providers illustrated five foundational qualities to Inuit birth in a good way. As described in chapters 3 and 5 of my thesis, Inuit midwifery was central to birth in a good way both in the context of evacuation and community-based childbirth in Nunavik. Midwifery services that are led by Inuit and grounded

in Inuit traditions and knowledge systems, that support Inuit self-determination, and are designed and carried out in collaboration with settler service providers and institutions have the potential to create a more positive experience of childbirth. When such services coincide with efforts to reduce inequities in social determinants Inuit health, they have the potential to reduce disparities in Inuit perinatal outcomes and help keep childbirth in Nunavik.

**Limitations**

Methods and results

Most of my research involved fuzzy cognitive mapping (FCM) with Inuit and service providers in Montreal and Nunavik. There are well-recognized limitations to FCM, among them the fact that FCM capture s participants' knowledge in a particular moment (80). Although this "snapshot" of knowledge places certain limits on using FCM to inform health service re-design, this is especially important to consider in the context of Nunavik and Inuit Nunangat more broadly– a region experiencing rapid and complex change (17, 52). Additionally, FCM produces soft models of causal knowledge, which does not guarantee that an apparently causal relationship in a map is in fact causal, nor that it will be observed. This requires us to interpret the maps as guiding orientations for health service design rather than fixed or guaranteed pathways for successful action.

Although highly useful in comparing multiple stakeholder perspectives, interpreting FCM across cultural gaps can be challenging and complex (2, 82, 83). In my research with Inuit and service providers, the cultural gap was compounded by longstanding and deeply entrenched power differentials of colonized/colonizer and patient/provider. I sought to mitigate these differentials by engaging Inuit facilitators who acted as cultural brokers for FCM with Inuit, as well as conducting mapping with Inuit and service providers separately. While mapping sessions were conducted in English and Inuktitut, the final maps were translated into English, with a high likelihood that the meaning of some concepts was altered. Member-checking sessions with participants supported the intercultural analysis, helping to validate the final maps.

Chapters 3 and 5 of my dissertation present overall category maps to facilitate the dissemination of highly complex knowledge models containing many factors and even more relationships. Although participatory FCM encourages map authors to be involved in the categorization process (80), the number of participants in my research made this level of stakeholder

engagement unfeasible. Collaborating with the Inuit researchers on the thematic analysis and categorization of the maps helped to mitigate this.

The fieldwork in Montreal and Nunavik engaged 64 Inuit community members, 11 Inuit perinatal service providers, and 29 non-Inuit service providers though fuzzy cognitive mapping. The small number of Inuit participants may limit the generalizability of the findings to all Inuit in Nunavik. Moreover, recruiting a wide representation of voices from the centre and margins of communities is a known challenge for research among historically oppressed and marginalized groups (127). Using local perinatal service networks to recruit participants, while attending to diversity in age, gender, community of residence, and lived experience of community-based childbirth and/or childbirth evacuation may counterbalance this. While the findings of the thesis cannot be generalized to all Inuit in Nunavik, the process of engaging Inuit stakeholders in operationalizing the terms of culturally safe health services holds wider application and relevance.

The primary limitation of the scoping review in Chapter 2 is due to the fact that the practice of childbirth evacuation in Canada has and continues to vary widely across different regions and Indigenous communities. The inconsistent nature of the practice makes generalizing findings and drawing conclusions difficult. A further limitation of scoping reviews is that they do not appraise studies for their methodological quality.

Contextual limitations

Fieldwork for my dissertation took place during the COVID-19 pandemic, bringing with it several challenges. Primary among them, was my inability to participate in the research activities in Nunavik. In my experience of FCM with Inuit and service providers in Montreal, being physically present during the sessions significantly contributed to understanding participants' complex knowledge. Being able to ask clarifying questions and having access to participants non-verbal communication brought rich insights that could not be captured by note-taking alone. It is therefore possible that my lack of participation in the Nunavik mapping could have further limited my thematic analysis of the maps across an already existing cultural divide. My regular debriefings with the Inuit researchers following their mapping sessions may have counterbalanced this limitation, along with our collaborative thematic analysis of the maps.

## Future Directions

*Need for further research on childbirth evacuation among rural and remote Indigenous communities in Canada.*

The scoping review in Chapter 2 illustrated multiple intersecting adverse factors and outcomes associated with the practice of childbirth evacuation. The review identified the troubling fact that evacuation continues in the face of decades of well-documented harms to Indigenous families and communities. Improved perinatal outcomes have long been used to justify any associated harms to Indigenous Peoples. Emerging evidence from a large retrospective cohort study of women living in First Nations communities in Manitoba casts doubt on this assertion (128). Furthermore, as perinatal outcomes can have long lasting impacts on maternal-infant health, additional research on the practice's long-term impacts are needed. Furthermore, examining the issue from a decolonizing perspective that attends to the colonial origins of the practice may offer important insights into the intergenerational impacts of childbirth evacuation, in particular the potential role of intergenerational trauma and stress proliferation (55). Lastly, as demonstrated by the scoping review, the field of research on Indigenous childbirth evacuation is largely dominated by settler researchers. Future research led by Indigenous Peoples – especially among Métis communities – is indicated.

*Need for research on the impact of cultural safety interventions co-designed in partnership with Indigenous communities on Indigenous perinatal outcomes and maternal child health.*

Chapter 4 of my dissertation described the implementation and preliminary assessment of a co-designed cultural safety intervention with Indigenous stakeholders and their perinatal service providers. Tested against a modified theory of planned behaviour (acronym CASCADA), a cultural safety training led by Inuit midwives demonstrated positive impacts on service providers' knowledge of cultural safety and actions that derive from it. This supports similar research on the effectiveness of certain cultural safety educational programs for health service providers (129). However, as a recent scoping review on cultural safety training for health and education service providers in Canada, USA, New Zealand, and Australia concluded, additional research is needed to evaluate the impact of such interventions on Indigenous health outcomes (130).

*Need for research to support Inuit midwifery capacity in Nunavik.*

As previous regional reports indicate, local midwifery capacity in Nunavik is challenged by multiple factors in a rapidly changing physical and social environment (64, 65). In chapters 3 and 5 of my thesis, stakeholders repeatedly emphasized the importance of Inuit midwifery to birth in a good way in Nunavik and Montreal, stressing its positive impacts on maternal and family perinatal health and wellness. Fuzzy cognitive mapping also indicated that Inuit midwives play an important role in encouraging Inuit perinatal traditions, strengthening the social fabric in the communities and supporting local resource and infrastructure investment in Nunavik. Encouraging as these findings are, the full nature of the impacts of midwifery – especially community-level impacts – could benefit from future research. Moreover, considering the central importance of midwifery services to Inuit communities suggested by FCM, an examination of the current barriers and facilitators of local Inuit midwifery, alongside an inquiry into strategies to support capacity and sustainability of local midwifery services in Nunavik is needed.

Lastly, my research program largely focused on exploring the meaning and operational terms for culturally safer birthing services for Inuit in the context of childbirth evacuation and community-based birthing in Nunavik. Future research should focus on implementation and evaluation of interventions informed by the terminology set out in my thesis, and this is the task of the longitudinal participatory project.

## Chapter 7: Conclusion & Summary

Published and gray literature on childbirth evacuation among rural and remote Indigenous communities in Canada summarized in Chapter 2 of my thesis indicated that multiple intersecting harms are associated with the practice. Two features of routine evacuation – its inability to address inequities in structural social determinants of health of Indigenous Peoples and its hindrance of their access to protective factors of Indigenous health – suggest the practice is unlikely to close the gap in Indigenous perinatal outcome inequities. The scoping review illustrated how the equal application of routine evacuation policies can inequitably impact Indigenous groups and potentially contribute to significant health outcome disparities, especially when such practices are grounded in colonialism and anti-Indigenous racism. These findings are made more significant by the paucity of studies examining the impact of childbirth evacuation on Indigenous perinatal outcomes and long-term Indigenous maternal-infant and family health. Surveying the evidence from a field dominated by settler researchers indicates that more Indigenous-led research, especially among Métis communities is necessary.

My doctoral project offers knowledge of how to facilitate intercultural participatory research to inform the design and implementation of culturally safe birthing services for Inuit from Nunavik. Chapters 3 and 5 illustrate how participatory fuzzy cognitive mapping can level the playing field for stakeholder engagement across wide power differentials to produce the evidence needed for local health service design. Engaging a wide representation of Inuit stakeholders across Nunavik, my work also illustrates the robust applicability of fuzzy cognitive mapping to research with Inuit from Nunavik. Applying it in a transparent and reproducible way, my doctoral thesis points to the effectiveness of operator-independent weighting of causal knowledge as a useful tool in Nunavik communities for whom participant weighting is not feasible or meaningful.

The practice paper in Chapter 4 illustrates how participatory research designed with multiple entry points for meaningful and frequent stakeholder participation can support local improvements to culturally safer health services for Indigenous Peoples. This component of my work contributes knowledge on effective strategies for building relationships with Indigenous stakeholders and increasing settler service providers' engagement in enhancing the cultural safety of their services.

Stakeholder perspectives indicated that giving birth in a good way for Inuit is the result of complex interacting factors, both in the context of childbirth evacuation and community-based birthing in Nunavik. Fuzzy cognitive mapping with Inuit and their perinatal service providers pointed to five foundational features of culturally safe birthing services, regardless of where childbirth takes place. Primary among them is the role of Inuit midwifery. Stakeholder visions suggest that Inuit midwives play a positive and central role in facilitating culturally safe birth for Inuit and help to keep childbirth in the communities. Fuzzy cognitive mapping further indicated that Inuit-midwifery services improve maternal health and wellness in pregnancy, encourage the transmission of Inuit perinatal traditions, support family cohesion and community connectedness, and facilitate investment in local resources and infrastructure in Nunavik. The full nature of these effects is only partially understood and would benefit from additional research. In addition to being midwifery-led, culturally safe birthing services must be grounded in Inuit traditions and knowledge systems, thereby facilitating cultural continuity for Inuit from Nunavik. Supported by settler service providers and institutions working in solidarity with Inuit, such services are Inuit-led, restoring self-determination and equity in social determinants of Inuit health. Stakeholder perspectives suggest that health services informed by these principles can help to keep childbirth in Nunavik and support Inuit to give birth in a good way, wherever birth may take place.

REFERENCES

1. Giles BG, Findlay CS, Haas G, LaFrance B, Laughing W, Pembleton S. Integrating conventional science and aboriginal perspectives on diabetes using fuzzy cognitive maps. Social science & medicine. 2007;64(3):562-76.
2. Sarmiento I, Cockcroft A, Dion A, Paredes-Solís S, De Jesús-García A, Melendez D, et al. Combining Conceptual Frameworks on Maternal Health in Indigenous Communities—Fuzzy Cognitive Mapping Using Participant and Operator-independent Weighting. Field Methods. 2022;34(3):223-39.
3. Harris ZS, Harris ZS. Discourse analysis: Springer; 1970.
4. Smylie J, Crengle S, Freemantle J, Taualii M. Indigenous birth outcomes in Australia, Canada, New Zealand and the United States–an overview. The open women's health journal. 2010(4):7.
5. Thorsen ML, Harris S, McGarvey R, Palacios J, Thorsen A. Evaluating disparities in access to obstetric services for American Indian women across Montana. J Rural Health. 2022;38(1):151-60.
6. Kildea S, Wardaguga M. Childbirth in Australia: aboriginal and Torres Strait islander women. Childbirth across cultures: ideas and practices of pregnancy, childbirth and the postpartum. 2009:275-86.
7. Graham S, Pulver LR, Wang YA, Kelly PM, Laws PJ, Grayson N, et al. The urban-remote divide for Indigenous perinatal outcomes. Med J Aust. 2007;186(10):509-12.
8. Salmon V, Brocious H, Demientieff LX. When delivery means departure: Describing the practice and impacts of mandated maternal transport in Alaska. Journal of Rural Mental Health. 2022.
9. Smylie J, O'Brien K, Beaudoin E, Daoud N, Bourgeois C, George EH, et al. Long-distance travel for birthing among Indigenous and non-Indigenous pregnant people in Canada. CMAJ. 2021;193(25):E948-E55.
10. Eggenberger L, Cruz S, Moffitt P. Dene, métis and inuvialuit peoples' voices on the impact of Canada's perinatal transport and non-medical escort policy in their communities: an outcome assessment approach and narrative literature review. International Journal of Circumpolar Health. 2022;81(1):2149061.
11. Dawson P, Jaye C, Gauld R, Hay-Smith J. Barriers to equitable maternal health in Aotearoa New Zealand: an integrative review. Int J Equity Health. 2019;18(1):168.
12. Vang ZM, Gagnon R, Lee T, Jimenez V, Navickas A, Pelletier J, et al. Interactions Between Indigenous Women Awaiting Childbirth Away From Home and Their Southern, Non-Indigenous Health Care Providers. Qual Health Res. 2018;28(12):1858-70.
13. Van Wagner V, Osepchook C, Harney E, Crosbie C, Tulugak M. Remote midwifery in Nunavik, Quebec, Canada: outcomes of perinatal care for the Inuulitsivik health centre, 2000-2007. Birth. 2012;39(3):230-7.
14. Luo Z-C, Wilkins R, Heaman M, Smylie J, Martens PJ, McHugh NG, et al. Birth outcomes and infant mortality among First Nations Inuit, and non-Indigenous women by northern versus southern residence, Quebec. J Epidemiol Community Health. 2012;66(4):328-33.
15. Luo Z-C, Senécal S, Simonet F, Guimond É, Penney C, Wilkins R. Birth outcomes in the Inuit-inhabited areas of Canada. Cmaj. 2010;182(3):235-42.

16. Simonet F, Wilkins R, Luo Z-C. Temporal trends in Inuit, First Nations and non-Aboriginal birth outcomes in rural and northern Quebec. International Journal of Circumpolar Health. 2012;71(1):18791.
17. Douglas V. Childbirth among the Canadian Inuit: a review of the clinical and cultural literature. International Journal of Circumpolar Health. 2006;65(2):117-32.
18. Lawford K, Giles A. Marginalization and coercion: Canada's evacuation policy for pregnant First Nations women who live on reserves in rural and remote regions. Pimatisiwin. 2012;10(3):327-40.
19. Lawford K, Giles AR. An analysis of the evacuation policy for pregnant First Nations women in Canada. AlterNative: An International Journal of Indigenous Peoples. 2012;8(3):329-42.
20. Nesbitt TS, Connell FA, Hart LG, Rosenblatt RA. Access to obstetric care in rural areas: effect on birth outcomes. Am J Public Health. 1990;80(7):814-8.
21. Kozhimannil KB, Hung P, Henning-Smith C, Casey MM, Prasad S. Association between loss of hospital-based obstetric services and birth outcomes in rural counties in the United States. Jama. 2018;319(12):1239-47.
22. Grzybowski S, Fahey J, Lai B, Zhang S, Aelicks N, Leung BM, et al. The safety of Canadian rural maternity services: a multi-jurisdictional cohort analysis. BMC Health Services Research. 2015;15:1-7.
23. Grzybowski S, Stoll K, Kornelsen J. Distance matters: a population based study examining access to maternity services for rural women. BMC health services research. 2011;11(1):1-8.
24. Örtqvist AK, Haas J, Ahlberg M, Norman M, Stephansson O. Association between travel time to delivery unit and unplanned out-of-hospital birth, infant morbidity and mortality: A population-based cohort study. Acta Obstetricia et Gynecologica Scandinavica. 2021;100(8):1478-89.
25. Malouf RS, Tomlinson C, Henderson J, Opondo C, Brocklehurst P, Alderdice F, et al. Impact of obstetric unit closures, travel time and distance to obstetric services on maternal and neonatal outcomes in high-income countries: a systematic review. BMJ open. 2020;10(12):e036852.
26. Lisonkova S, Haslam MD, Dahlgren L, Chen I, Synnes AR, Lim KI. Maternal morbidity and perinatal outcomes among women in rural versus urban areas. Cmaj. 2016;188(17-18):E456-E65.
27. Ospina M, Osornio-Vargas ÁR, Nielsen CC, Crawford S, Kumar M, Aziz K, et al. Socioeconomic gradients of adverse birth outcomes and related maternal factors in rural and urban Alberta, Canada: a concentration index approach. BMJ open. 2020;10(1):e033296.
28. Kolahdooz F, Launier K, Nader F, Yi KJ, Baker P, McHugh T-L, et al. Canadian Indigenous women's perspectives of maternal health and health care services: a systematic review. Divers Equal Health Care. 2016;13(5):335.
29. Kornelsen J, Kotaska A, Waterfall P, Willie L, Wilson D. The geography of belonging: the experience of birthing at home for First Nations women. Health & place. 2010;16(4):638-45.
30. Webb R, Ayers S, Bogaerts A, Jeličić L, Pawlicka P, Van Haeken S, et al. When birth is not as expected: a systematic review of the impact of a mismatch between expectations and experiences. BMC pregnancy and childbirth. 2021;21(1):1-14.

31. Shiva L, Desai G, Satyanarayana VA, Venkataram P, Chandra PS. Negative childbirth experience and post-traumatic stress disorder-a study among postpartum women in South India. Frontiers in Psychiatry. 2021;12:640014.
32. McKelvin G, Thomson G, Downe S. The childbirth experience: A systematic review of predictors and outcomes. Women and Birth. 2021;34(5):407-16.
33. Bell AF, Andersson E. The birth experience and women's postnatal depression: a systematic review. Midwifery. 2016;39:112-23.
34. Størksen HT, Garthus-Niegel S, Vangen S, Eberhard-Gran M. The impact of previous birth experiences on maternal fear of childbirth. Acta obstetricia et gynecologica Scandinavica. 2013;92(3):318-24.
35. Organization WH. WHO recommendations on intrapartum care for a positive childbirth experience: World Health Organization; 2018.
36. Taheri M, Takian A, Taghizadeh Z, Jafari N, Sarafraz N. Creating a positive perception of childbirth experience: systematic review and meta-analysis of prenatal and intrapartum interventions. Reproductive health. 2018;15(1):1-13.
37. Homer CS. Models of maternity care: evidence for midwifery continuity of care. Medical Journal of Australia. 2016;205(8):370-4.
38. Aune I, Torvik HM, Selboe S-T, Skogås A-K, Persen J, Dahlberg U. Promoting a normal birth and a positive birth experience—Norwegian women′ s perspectives. Midwifery. 2015;31(7):721-7.
39. Fair CD, Morrison TE. The relationship between prenatal control, expectations, experienced control, and birth satisfaction among primiparous women. Midwifery. 2012;28(1):39-44.
40. Nilsson L, Thorsell T, Hertfelt Wahn E, Ekström A. Factors Influencing Positive Birth Experiences of First-Time Mothers. Nursing Research and Practice. 2013;2013:349124.
41. Yeung S. Conceptualizing cultural safety: Definitions and applications of safety in health care for Indigenous mothers in Canada. Journal for Social Thought. 2016;1.
42. Healey GK. Tradition and culture: An important determinant of Inuit women's health. International Journal of Indigenous Health. 2008;4(1):25-33.
43. Brascoupé S, Waters C. Cultural safety exploring the applicability of the concept of cultural safety to aboriginal health and community wellness. International Journal of Indigenous Health. 2009;5(2):6-41.
44. Kirmayer LJ. Rethinking cultural competence. Sage Publications Sage UK: London, England; 2012. p. 149-64.
45. McCalman P, Forster D, Springall T, Newton M, McLardie-Hore F, McLachlan H. Exploring satisfaction among women having a First Nations baby at one of three maternity hospitals offering culturally specific continuity of midwife care in Victoria, Australia: A cross-sectional survey. Women and Birth. 2023.
46. Hartz DL, Blain J, Caplice S, Allende T, Anderson S, Hall B, et al. Evaluation of an Australian Aboriginal model of maternity care: the Malabar community midwifery link service. Women and Birth. 2019;32(5):427-36.
47. Churchill ME, Smylie JK, Wolfe SH, Bourgeois C, Moeller H, Firestone M. Conceptualising cultural safety at an Indigenous-focused midwifery practice in Toronto, Canada: qualitative interviews with Indigenous and non-Indigenous clients. BMJ open. 2020;10(9):e038168.

48. Ireland S, Montgomery-Andersen R, Geraghty S. Indigenous doulas: a literature review exploring their role and practice in western maternity care. Midwifery. 2019;75:52-8.
49. Bourassa C, McKay-McNabb K, Hampton M. Racism, sexism and colonialism: The impact on the health of Aboriginal women in Canada. Canadian Woman Studies/les cahiers de la femme. 2005.
50. Health CoSDo. Closing the gap in a generation: health equity through action on the social determinants of health: final report of the commission on social determinants of health: World Health Organization; 2008.
51. Auger MD. Cultural continuity as a determinant of Indigenous peoples' health: A metasynthesis of qualitative research in Canada and the United States. The International Indigenous Policy Journal. 2016;7(4).
52. Inuit Tapiriit K. Social determinants of Inuit health in Canada. Ottawa, Ontario: Inuit Tapiriit Kanatami; 2015. Available from: https://www.deslibris.ca/ID/244910 http://site.ebrary.com/id/10992963 http://books.scholarsportal.info/viewdoc.html?id=/ebooks/ebooks0/gibson_cppc-chrc/2015-02-25/1/10992963.
53. Greenwood M, De Leeuw S, Lindsay N. Challenges in health equity for Indigenous peoples in Canada. The Lancet. 2018;391(10131):1645-8.
54. Czyzewski K. Colonialism as a broader social determinant of health. The International Indigenous Policy Journal. 2011;2(1).
55. Shaheen-Hussain S. Fighting for a hand to hold: confronting medical colonialism against Indigenous children in Canada: McGill-Queen's University Press; 2020.
56. Coulthard GS. Red skin, white masks: Rejecting the colonial politics of recognition. Minneapolis: Minnesota. 2014.
57. Eve T, Yang KW. Decolonization is not a metaphor. Tabula Rasa [Internet]. 2021; 38:[61-111 pp.].
58. Smylie J, Kirst M, McShane K, Firestone M, Wolfe S, O'Campo P. Understanding the role of Indigenous community participation in Indigenous prenatal and infant-toddler health promotion programs in Canada: A realist review. Social Science & Medicine. 2016;150:128-43.
59. McCalman P, McLardie-Hore F, Newton M, McLachlan H, Forster D. Trust, privacy, community, and culture: Important elements of maternity care for Aboriginal and Torres Strait Islander women giving birth in Victoria. Women Birth. 2023;36(1):e150-e60.
60. Nations U. United Nations Declaration on the Rights of Indigenous Peoples. 2007. p. 32.
61. Auger N, Park AL, Zoungrana H, Sing MF, Lo E, Luo ZC. Widening inequality in extreme macrosomia between Indigenous and non-Indigenous populations of Québec, Canada. Australian and New Zealand journal of public health. 2013;37(1):58-62.
62. Corporation M. Recent History and Demographics 2023 [Available from: https://www.makivvik.ca/recent-history-demographics/.
63. Epoo B, Stonier J, Van Wagner V, Harney E. Learning midwifery in Nunavik: community-based education for Inuit midwives. Pimatisiwin. 2012;10(3):283-99.
64. Gagnon M-JG, Dejnane; Girard, Yoan; Paré, Monique; Pernet, Fabien ; Watkins, Jennifer Regional Reference Framework (2015-2023): For Birth Homes and Midwifery in Nunavik. In: Practices DoIVa, editor. 2015. p. 58.
65. Nunavik Rrdlsedss. Portait de santé Nunavik: les jeunes enfants et leurs familles (2014). In: Québec RrdlsedssNecalIndspd, editor. 2015. p. 90.

66. Curtis C. Homeless Indigenous women are 'turned away by the system' when seeking treatment: shelter director. Montreal Gazette. 2019.
67. Curtis C. After homeless woman is sexually assaulted, alleged assailant released. Montreal Gazette. Montreal Gazette. 2018.
68. Paulette L. Midwifery in the North. Fort Fitzgerald, Alberta: Royal Commission on Aboriginal Peoples; 1995.
69. Archibald L, Bird P, Brann C, Greig M, Kanayuk E, Kaufert P, et al. Documentation of traditional inuit practices related to pregnancy and childbirth. Journal SOGC. 1996;18(5):423-33.
70. Van Wagner V, Epoo B, Nastapoka J, Harney E. Reclaiming birth, health, and community: midwifery in the Inuit villages of Nunavik, Canada. J Midwifery Womens Health. 2007;52(4):384-91.
71. Fraser S, Mickpegak R, Hunter J. Tasiurvik family house pamphlet2017.
72. Le Mouël C. Entrer dans une Maison de la famille inuit : enjeux sociaux et spatiaux du seuil: Espace populations sociétés; 2021 [Available from: https://journals.openedition.org/eps/11011?lang=en.
73. Girard I. Ilagiilluta: Hudson Coast SIPPE Program. 2017. p. 18.
74. Andersson N. Participatory research—A modernizing science for primary health care. Journal of general and family medicine. 2018;19(5):154-9.
75. Jagosh J, Macaulay AC, Pluye P, Salsberg J, Bush PL, Henderson J, et al. Uncovering the benefits of participatory research: implications of a realist review for health research and practice. The Milbank Quarterly. 2012;90(2):311-46.
76. Macaulay AC, Jagosh J, Seller R, Henderson J, Cargo M, Greenhalgh T, et al. Assessing the benefits of participatory research: a rationale for a realist review. Global health promotion. 2011;18(2):45-8.
77. Stevenson K, Filoche S, Cram F, Lawton B. Te Ha o Whanau: A culturally responsive framework of maternity care. N Z Med J. 2020;133(1517):66-72.
78. Kurup AS. Equity, social determinants and public health programmes: World Health Organization; 2010.
79. Gray SA, Zanre E, Gray SR. Fuzzy cognitive maps as representations of mental models and group beliefs. Fuzzy cognitive maps for applied sciences and engineering: From fundamentals to extensions and learning algorithms: Springer; 2013. p. 29-48.
80. Andersson N, Silver H. Fuzzy cognitive mapping: an old tool with new uses in nursing research. Journal of advanced nursing. 2019;75(12):3823-30.
81. Özesmi U, Özesmi SL. Ecological models based on people's knowledge: a multi-step fuzzy cognitive mapping approach. Ecological modelling. 2004;176(1-2):43-64.
82. Tratt E, Sarmiento I, Gamelin R, Nayoumealuk J, Andersson N, Brassard P. Fuzzy cognitive mapping with Inuit women: what needs to change to improve cervical cancer screening in Nunavik, northern Quebec? BMC health services research. 2020;20:1-6.
83. Sarmiento I, Paredes-Solís S, Loutfi D, Dion A, Cockcroft A, Andersson N. Fuzzy cognitive mapping and soft models of indigenous knowledge on maternal health in Guerrero, Mexico. BMC medical research methodology. 2020;20(1):1-16.
84. Sarmiento I, Ansari U, Omer K, Gidado Y, Baba MC, Gamawa AI, et al. Causes of short birth interval (kunika) in Bauchi State, Nigeria: systematizing local knowledge with fuzzy cognitive mapping. Reproductive health. 2021;18:1-18.
85. Niesink P, Poulin K, Šajna M. Computing transitive closure of bipolar weighted digraphs. Discrete Applied Mathematics. 2013;161(1-2):217-43.

86. Butts CT. Social network analysis: A methodological introduction. Asian Journal of Social Psychology. 2008;11(1):13-41.
87. Braun V, Clarke V. Reflecting on reflexive thematic analysis. Qualitative research in sport, exercise and health. 2019;11(4):589-97.
88. Canadian Institutes of Health Research NSaER, Council of Canada aSSaHRCoC. TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans. 2022. p. 288.
89. Kanatami IT. National Inuit Strategy on Research: Inuit Tapiriit Kanatami; 2018.
90. Ficklin E, Tehee M, Killgore RM, Isaacs D, Mack S, Ellington T. Fighting for our sisters: Community advocacy and action for missing and murdered Indigenous women and girls. Journal of Social Issues. 2022;78(1):53-78.
91. Mahood SC. Medical education: Beware the hidden curriculum. Canadian family physician. 2011;57(9):983-5.
92. Amamatuak M, Stonier J, Inuulitsivik Health C. The Inuulitsivik maternity : sharing the experience. Povungnituk, Que.: Inuulitsivik Health Centre; 1989.
93. Stonier J. The innulitsivik maternity. Childbirth in the Canadian North: Epidemiological, clinical and cultural perspectives. 1990:61-74.
94. Carignan G. Pregnancies and Births Among the Inuit Population of Hudson Bay 1989-91: Projet Nord, Community Health Department, University of Laval Hospital Centre; 1993.
95. Gagné J, Joubert P, Ross J, Tourigny A, Université Laval. Centre hospitalier. Département de santé c. An Evaluation of perinatal care and services in the Hudson Bay region. The Organization. New ed. [Québec]: DSC-CHUL; 1991.
96. Dion A, Nakajima A, McGee A, Andersson N. How adolescent mothers interpret and prioritize evidence about perinatal child protection involvement: Participatory contextualization of published evidence. Child and Adolescent Social Work Journal. 2022;39(6):785-803.
97. Jung D. Donner la vie en terre inconnue, le traumatisme invisible des Inuit. Radio Canada. 2021;Sect. Esapces Autochtones.
98. Parry D, Salsberg J, Macaulay AC, Fcpc C. A guide to researcher and knowledge-user collaboration in health research. Ottawa: Canadian Institutes of Health Research. 2009.
99. Atikamekw TCotAoMatCdlN. Joyce's Principle. Quebec, Canada; 2020.
100. Baba L. Cultural safety in First Nations, Inuit and Métis public health: Environmental scan of cultural competency and safety in education, training and health services: National Collaborating Centre for Aboriginal Health Prince George, Canada; 2013.
101. Gold ST, O'Neil J, Van Wagner V. Examining midwifery-based options to improve continuity of maternity care services in remote Nunavut communities: Canadian Health Services Research Foundation; 2005.
102. Struthers A, Winters S, Metge CJ. Understanding the strengths and needs of women who temporarily relocate to Winnipeg for birth. 2014.
103. Simonet F, Wilkins R, Labranche E, Smylie J, Heaman M, Martens P, et al. Primary birthing attendants and birth outcomes in remote Inuit communities-a natural" experiment" in Nunavik, Canada. Journal of Epidemiology & Community Health. 2009.
104. Couchie C. A report on best practices for returning birth to rural and remote aboriginal communities. Journal of Obstetrics and Gynaecology Canada: JOGC= Journal D'obstetrique et Gynecologie du Canada: JOGC. 2007;29(3):250-4.
105. Aboriginal Population Profile, 2016 Census Nunavik [Inuit region], Quebec [Internet]. Government of Canada. 2019. Available from: https://www12.statcan.gc.ca/census-recensement/2016/dp-

pd/abpopprof/details/page.cfm?Lang=E&Geo1=AB&Code1=2016C1005084&Data=Count&SearchText=Nunavik&SearchType=Begins&B1=All&GeoLevel=PR&GeoCode=2016C1005084&SEX_ID=1&AGE_ID=1&RESGEO_ID=1
106. Belaid L, Atim P, Atim E, Ochola E, Ogwang M, Bayo P, et al. Communities and service providers address access to perinatal care in postconflict Northern Uganda: socialising evidence for participatory action. Family Medicine and Community Health. 2021;9(2).
107. Belaid L, Atim P, Ochola E, Omara B, Atim E, Ogwang M, et al. Community views on short birth interval in Northern Uganda: a participatory grounded theory. Reproductive Health. 2021;18(1):1-11.
108. Silver H, Tukalak S, Sarmiento I, Budgell R, Cockcroft A, Vang ZM, et al. Giving birth in a good way when it must take place away from home: Participatory research into visions of Inuit families and their Montreal-based medical providers. Birth. 2023.
109. yWorks. yEd. 3.23.2 ed2017.
110. Corcoran PM, Catling C, Homer CS. Models of midwifery care for Indigenous women and babies: a meta-synthesis. Women and Birth. 2017;30(1):77-86.
111. Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women. Cochrane database of systematic reviews. 2016(4).
112. Health Council of C. Understanding and improving aboriginal maternal and child health in Canada : compendium of promising practices. Toronto, Ont.: Health Council of Canada; 2011.
113. Sufredini F, Catling C, Zugai J, Chang S. The effects of social support on depression and anxiety in the perinatal period: A mixed-methods systematic review. Journal of Affective Disorders. 2022.
114. Nelson C, Lawford KM, Otterman V, Darling EK. Mental health indicators among pregnant Aboriginal women in Canada: results from the Maternity Experiences Survey. Health Promotion & Chronic Disease Prevention in Canada. 2018;38.
115. Richmond CA. The social determinants of Inuit health: a focus on social support in the Canadian Arctic. International journal of circumpolar health. 2009;68(5):471-87.
116. De Leeuw S. Activating place: geography as a determinant of Indigenous peoples' health and well-being. Determinants of Indigenous peoples' health: Beyond the social. 2018:187-203.
117. Pan American Health O, Pan American Health O, Commission of the Pan American Health Organization on E, Health Inequalities in the A. Just Societies: Health Equity and Dignified Lives. Report of the Commission of the Pan American Health Organization on Equity and Health Inequalities in the Americas. 2019.
118. Loppie Reading C, Wien F. Health inequalities and social determinants of Aboriginal peoples' health. Prince George, BC: National Collaborating Centre for Aboriginal Health. 2009;42.
119. ten Hoope-Bender P, de Bernis L, Campbell J, Downe S, Fauveau V, Fogstad H, et al. Improvement of maternal and newborn health through midwifery. The Lancet. 2014;384(9949):1226-35.
120. Cibralic S, Pickup W, Diaz AM, Kohlhoff J, Karlov L, Stylianakis A, et al. The impact of midwifery continuity of care on maternal mental health: A narrative systematic review. Midwifery. 2023;116:103546.
121. Renfrew MJ, McFadden A, Bastos MH, Campbell J, Channon AA, Cheung NF, et al. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. The Lancet. 2014;384(9948):1129-45.

122. McIvor O, Napoleon A, Dickie KM. Language and culture as protective factors for at-risk communities. 2009.
123. Dussault R, Erasmus G. Report of the royal commission on aboriginal peoples. 1996.
124. Commission V. Public Inquiry Commission on relations between Indigenous Peoples and Certain Public Services in Québec: Listening, Reconciliation and Progress. Final report Quebec: Government of Quebec. 2019.
125. Canada TaRCo. Truth and Reconciliation Commission of Canada: Calls to action. Ottawa, Canada: Government of Canada; 2015. p. 20.
126. Douglas VK. The Rankin Inlet birthing centre: community midwifery in the Inuit context. International Journal of Circumpolar Health. 2011;70(2):178-85.
127. Pratt B. Inclusion of marginalized groups and communities in global health research priority-setting. Journal of Empirical Research on Human Research Ethics. 2019;14(2):169-81.
128. Phillips-Beck W. A decolonizing approach in population health research: examining the impacts of the federal out for confinement policy on maternal and child outcomes in first nation communities in Manitoba. 2021.
129. Ryder C, Mackean T, Ullah S, Burton H, Halls H, McDermott D, et al. Development and validation of a questionnaire to measure attitude change in health professionals after completion of an Aboriginal health and cultural safety training Programme. The Australian Journal of Indigenous Education. 2019;48(1):24-38.
130. MacLean TL, Qiang JR, Henderson L, Bowra A, Howard L, Pringle V, et al. Indigenous cultural safety training for applied health, social work, and education professionals: A PRISMA scoping review. International Journal of Environmental Research and Public Health. 2023;20(6):5217.

# Appendices

## Appendices of Chapter 2

Chapter 2, Appendix A: PRISMA Checklist

| SECTION | ITEM | PRISMA-ScR CHECKLIST ITEM | REPORTED ON PAGE # |
|---|---|---|---|
| **TITLE** | | | |
| Title | 1 | Identify the report as a scoping review. | 1 |
| **ABSTRACT** | | | |
| Structured summary | 2 | Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives. | 1 |
| **INTRODUCTION** | | | |
| Rationale | 3 | Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach. | 4 |
| Objectives | 4 | Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives. | 4 |
| **METHODS** | | | |
| Protocol and registration | 5 | Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number. | 4 |
| Eligibility criteria | 6 | Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale. | 4-5 |
| Information sources* | 7 | Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed. | 5 |
| Search | 8 | Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated. | (see Figure 1) |
| Selection of sources of evidence† | 9 | State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review. | 5 |
| Data charting process‡ | 10 | Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators. | 5 |
| Data items | 11 | List and define all variables for which data were sought and any assumptions and simplifications made. | 5 |

| | | | |
|---|---|---|---|
| Critical appraisal of individual sources of evidence§ | 12 | If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate). | N/A |
| Synthesis of results | 13 | Describe the methods of handling and summarizing the data that were charted. | 6 |
| **RESULTS** | | | |
| Selection of sources of evidence | 14 | Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram. | 6 |
| Characteristics of sources of evidence | 15 | For each source of evidence, present characteristics for which data were charted and provide the citations. | See Table 1 |
| Critical appraisal within sources of evidence | 16 | If done, present data on critical appraisal of included sources of evidence (see item 12). | N/A |
| Results of individual sources of evidence | 17 | For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives. | See Table 1 |
| Synthesis of results | 18 | Summarize and/or present the charting results as they relate to the review questions and objectives. | 5-15 |
| **DISCUSSION** | | | |
| Summary of evidence | 19 | Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups. | 15-16 |
| Limitations | 20 | Discuss the limitations of the scoping review process. | 17 |
| Conclusions | 21 | Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps. | 18 |
| **FUNDING** | | | |
| Funding | 22 | Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review. | 18 |

**Appendices of Chapter 4**

Appendix 1: Cultural Safety Questionnaire (Pre-Workshop)

Hi,

Take 2 minutes to share your thoughts! Please take this short anonymous questionnaire about cultural safety. This is the **pre-workshop** questionnaire.
Please note that we will ask you to fill out a post-workshop questionnaire.

If you have in-depth comments or suggestions, please email us with any information you'd like to share.
Thank you!

* Required

## General questions

1. Is this your first session with the midwives from Nunavik? *
   - Yes
   - No
2. What is your current occupation?
   - Nurse
   - Staff physician
   - Resident
   - Medical student
   - Patient attendant
   - Administrative clerk
   - Other
3. If other, please specify:

4. How many years of practice/experience do you have?
   - Less than 5
   - Between 5 and 10
   - Between 11 and 20
   - More than 20
5. Gender
   - Woman
   - Man
   - Other
   - Prefer not to say
6. Have you worked with Indigenous families before? (Select all that apply)
   - At the hospital
   - In their communities
   - Not at all

## Multiple-choice questions

For each question (1-5) please select one answer

## CASCADA Questions

Please, read the statement and choose your answer based on your level of agreement

1 - Strongly disagree
2 - Disagree
3 - Neutral
4 - Agree
5 - Strongly agree

7. My patients' cultural beliefs are not important for health decision-making

| 1 | 2 | 3 | |
|---|---|---|---|

8. It is not necessary to consider my patients' cultural beliefs to provide good care

| 1 | 2 | 3 | |
|---|---|---|---|

9. Although many staff do not value cultural beliefs in their practice, I think that these beliefs contribute to my patients' health

| 1 | 2 | 3 | |
|---|---|---|---|

10. I will never consider including my patients' cultural beliefs and practices in the health decision-making process

| 1 | 2 | 3 | |
|---|---|---|---|

11. I have the knowledge and skills to incorporate my patients' cultural beliefs and practices in their care

| 1 | 2 | 3 | |
|---|---|---|---|

12. I will speak with my colleagues about how we could provide care that incorporates our patients' cultural beliefs and practices

| 1 | 2 | 3 | |
|---|---|---|---|

13. I will ask my patients about their cultural beliefs and practices and adjust my care plan accordingly

| 1 | 2 | 3 | |
|---|---|---|---|

14. For you, what is the most challenging aspect of providing health care for Indigenous people?

Chapter 4, Appendix 1: Cultural Safety Questionnaire (Post-Workshop)

Hi,
Take 2 minutes to share your thoughts! Please take this short anonymous questionnaire about cultural safety. This is the **pre-workshop** questionnaire.
Please note that we will ask you to fill out a post-workshop questionnaire.
If you have in-depth comments or suggestions, please email us with any information you'd like to share.
Thank you!

* Required

**General questions**

1. Is this your first session with the midwives from Nunavik? *
   - Yes
   - No
2. What is your current occupation?
   - Nurse
   - Staff physician
   - Resident
   - Medical student
   - Patient attendant
   - Administrative clerk
   - Other
3. If other, please specify:

4. How many years of practice/experience do you have?
   - Less than 5
   - Between 5 and 10
   - Between 11 and 20
   - More than 20
5. Gender
   - Woman
   - Man
   - Other
   - Prefer not to say
6. Have you worked with Indigenous families before? (Select all that apply)
   - At the hospital
   - In their communities
   - Not at all

**Multiple-choice questions**

For each question (1-5) please select one answer

**CASCADA Questions**

Please, read the statement and choose your answer based on your level of agreement

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

7. My patients' cultural beliefs are not important for health decision-making

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

8. It is not necessary to consider my patients' cultural beliefs to provide good care

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

9. Although many staff do not value cultural beliefs in their practice, I think that these beliefs contribute to my patients' health

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

10. I will never consider including my patients' cultural beliefs and practices in the health decision-making process

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

11. I have the knowledge and skills to incorporate my patients' cultural beliefs and practices in their care

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

12. I will speak with my colleagues about how we could provide care that incorporates our patients' cultural beliefs and practices

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

13. I will ask my patients about their cultural beliefs and practices and adjust my care plan accordingly

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

14. What is the most important thing that the session brought to you?

Chapter 4, Appendix 2: Innovation Award Project Evaluation Survey - Questionnaire for Families having participated in Project

**General**

- Were you aware of the new services offered at the MUHC for supporting Indigenous women giving birth?
    - Yes
    - No
- If yes, how did you find out about the options?
    - OBS Clinic posters
    - OBS Clinic nurses
    - Nurses or midwives in North
    - Social media
    - Family member
    - Other, please specify

- Were you given the Family Booklet when you were admitted to the hospital?
    - Yes
    - No
- Did you find the Family Booklet useful?
    - Yes
    - No
- Did you need a translator during your stay?
    - Yes
    - No
- If yes, was the translator helpful?
    - Yes
    - No
        - If No, please explain
- Did you need spiritual care services during your stay?
    - Yes
    - No
- If yes, was the spiritual care worker helpful?
    - Yes
    - No
        - If No, please explain

**Family support**

- Were you informed that you were allowed up to 4 people during your birth?
    - Yes
    - No

- Were all the people you wanted present at your birth?

    - Yes
    - No
- If No, please tell us why:
    - I did not know that 4 people were allowed with me
    - It was too expensive to have everyone travel
    - My family is taking care of my children up North
    - My family members could not leave their work
    - My family feels that travelling to Montreal is unsafe
    - I wanted my children to be present, but they are not allowed
    - I wanted more than 4 people
        - Other, specify:
- Where did your family members come from? Check all that apply:
    - Up North
    - I have family in Montreal/close to Montreal
    - Other, specify:
- Did the staff encourage your family to participate in your care as much as you wanted?
    - Yes
    - No
        - If no, please explain

**Access to Indigenous food**

- Were you informed that Indigenous food was available for you?
    - Yes
    - No
- If Yes, did you have the Indigenous food
    - Yes
    - No
- Were you aware that you could bring your own food and store it in the Indigenous food fridge?
    - Yes
    - No
- If Yes, did you bring your own food?
    - Yes
    - No

- Were you offered foods that you consider not appropriate for your health after giving birth?
    - No
    - Yes
        - If Yes, please explain

**Home-like environment**

- Did you feel the hospital staff were committed to offering you a home-like environment?

    - Yes
    - No
- Did you or your family make use of any art / seal pelts / essential oils / smudging spray / birth bundle?
    - Yes
    - No
- Do you have any suggestions to have more of a home-like environment?
- Did you feel supported in your traditions or cultural practices (if applicable)?
    - Yes
    - No
- If no, how could we better have supported you?

**Cultural safety**

Please, read the statement and choose your answer based on your level of agreement.
1 - Not at all 2- Rarely 3- Sometimes 4- Often 5- Always

- During this hospital stay, did nurses treat you with courtesy and respect?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

- During this hospital stay, did you feel the staff heard your voice?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

- During this hospital stay, how often did the hospital staff do everything they could to help you with your pain?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

- Did the staff make you or your family feel unsafe at any point during your hospital stay?
    - Yes
    - No
- If Yes, if you feel comfortable, could you tell us more about what happened?

- Was this your first birth experience at the MUHC?
    - Yes
    - No
- If No, how did it compare to your previous experience(s)?

- Is there anything else you would like to tell me regarding your birth experience?

Chapter 4, Appendix 3: Probabilistic transitive closure weights of the CASCADA results chain

Pre-intervention cumulative probabilistic transitive closure weights of the CASCADA results chain

| | C1 | A2 | S3 | C4 | A5 | D6 | A7 | |
|---|---|---|---|---|---|---|---|---|
| C1 | 0.00 | 0.94 | 0.44 | 0.92 | 0.51 | 0.70 | 0.83 | 4.35 |
| A2 | 0.00 | 0.00 | 0.15 | 0.84 | 0.33 | 0.66 | 0.83 | 2.81 |
| S3 | 0.00 | 0.00 | 0.00 | 0.15 | -0.21 | 0.48 | 0.60 | 1.02 |
| C4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.46 | 0.58 | 0.89 | 1.93 |
| A5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.75 | 0.75 | 1.51 |
| D6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | 0.80 |
| A7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.94 | 0.59 | 1.91 | 1.10 | 3.18 | 4.70 | |

Post-intervention cumulative probabilistic transitive closure weights of the CASCADA results chain

| | C1 | A2 | S3 | C4 | A5 | D6 | A7 | |
|---|---|---|---|---|---|---|---|---|
| C1 | 0.00 | 0.95 | 0.87 | 0.99 | 0.99 | 1.00 | 1.00 | 5.79 |
| A2 | 0.00 | 0.00 | 0.75 | 0.95 | 0.98 | 0.99 | 0.99 | 4.66 |
| S3 | 0.00 | 0.00 | 0.00 | 0.86 | 0.91 | 0.98 | 0.98 | 3.73 |
| C4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.75 | 0.97 | 0.97 | 2.68 |
| A5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.76 | 0.88 | 1.64 |
| D6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.76 | 0.76 |
| A7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0.00 | 0.95 | 1.62 | 2.80 | 3.63 | 4.71 | 5.58 | |

**Appendices of Chapter 4**

APPENDIX 1

Figure 1a Complete category map summarizing community visions of giving birth in a good way in Nunavik.

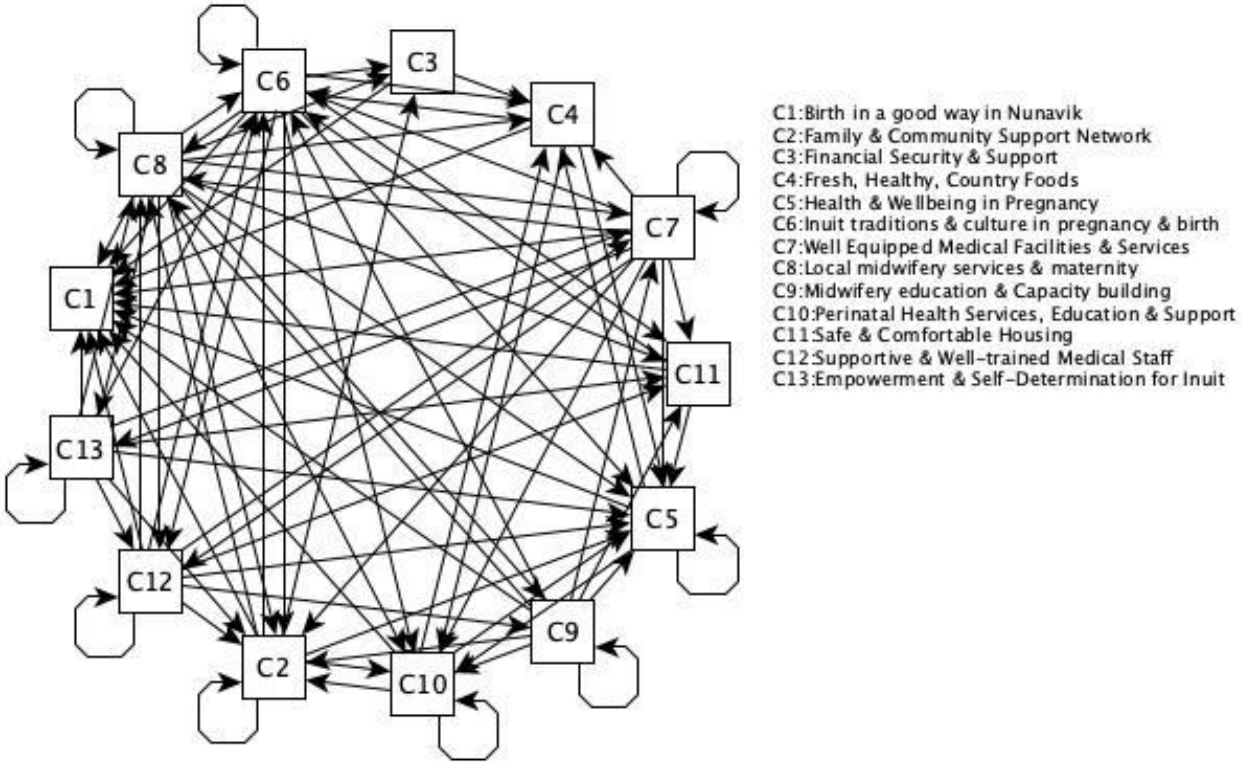

Table 1a. Adjacency matrix of the category map summarizing community visions of giving birth in a good way in Nunavik.

| | | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 | C13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Birth in a good way in Nunavik | C1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Family & Community Support Network | C2 | 0.48 | 0.19 | 0.05 | 0.00 | 0.05 | 0.05 | 0.00 | 0.05 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 |
| Financial Security & Support | C3 | 0.05 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fresh, Healthy, Country Foods | C4 | 0.24 | 0.00 | 0.00 | 0.00 | 0.10 | 0.05 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 |
| Health & Wellbeing in Pregnancy | C5 | 0.71 | 0.00 | 0.00 | 0.10 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 |
| Inuit traditions & culture in pregnancy & birth | C6 | 0.81 | 0.24 | 0.05 | 0.10 | 0.14 | 0.43 | 0.00 | 0.05 | 0.00 | 0.14 | 0.05 | 0.10 | 0.00 |
| Well Equipped Medical Facilities & Services | C7 | 1.00 | 0.24 | 0.00 | 0.05 | 0.24 | 0.24 | 0.38 | 0.38 | 0.00 | 0.05 | 0.10 | 0.10 | 0.05 |
| Local midwifery services & maternity | C8 | 0.95 | 0.24 | 0.10 | 0.10 | 0.24 | 0.48 | 0.33 | 0.29 | 0.05 | 0.19 | 0.10 | 0.05 | 0.10 |
| Midwifery education & Capacity building | C9 | 0.19 | 0.10 | 0.00 | 0.00 | 0.05 | 0.14 | 0.05 | 0.29 | 0.05 | 0.05 | 0.05 | 0.00 | 0.00 |
| Perinatal Health Services, Education & Support | C10 | 0.48 | 0.19 | 0.00 | 0.05 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 |
| Safe & Comfortable Housing | C11 | 0.24 | 0.00 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Supportive & Well-trained Medical Staff | C12 | 0.29 | 0.10 | 0.00 | 0.00 | 0.05 | 0.24 | 0.05 | 0.24 | 0.10 | 0.00 | 0.05 | 0.05 | 0.00 |
| Empowerment & Self-Determination for Inuit | C13 | 0.38 | 0.10 | 0.00 | 0.00 | 0.05 | 0.10 | 0.19 | 0.05 | 0.00 | 0.00 | 0.05 | 0.05 | 0.05 |

Legend: The numbers in the cells represent the cumulative net influence of one category on another, where 1 is the highest influence in the map.

Figure 2a Complete category map summarizing youth visions of maternal and family wellness during pregnancy and birth.

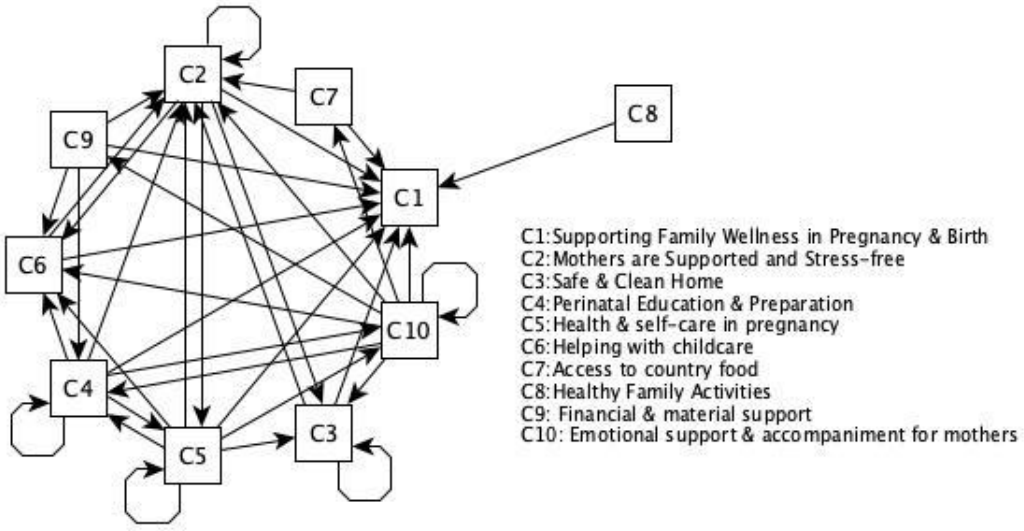

Table 1b. Adjacency matrix of category map summarizing youth visions of maternal and family wellness during pregnancy and birth.

| | | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C10 | C11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Supporting Family Wellness in Pregnancy & Birth | C1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mothers are Supported and Stress-free | C2 | 1.00 | 0.64 | 0.36 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 |
| Safe & Clean Home | C3 | 0.36 | 0.14 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Perinatal Education & Preparation | C4 | 0.36 | 0.36 | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 |
| Health & self-care in pregnancy | C5 | 0.93 | 0.21 | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.29 |
| Helping with childcare | C6 | 0.36 | 0.43 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Access to country food | C7 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Healthy Family Activities | C8 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Financial & material support | C10 | 0.21 | 0.29 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Emotional support & accompaniment for mothers | C11 | 0.43 | 0.43 | 0.14 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 | 0.00 | 0.21 |

Legend: The numbers in the cells represent the cumulative net influence of one category on another, where 1 is the highest influence in the map.

Figure 3.a Complete category map summarizing community visions of how to keep childbirth in Nunavik.

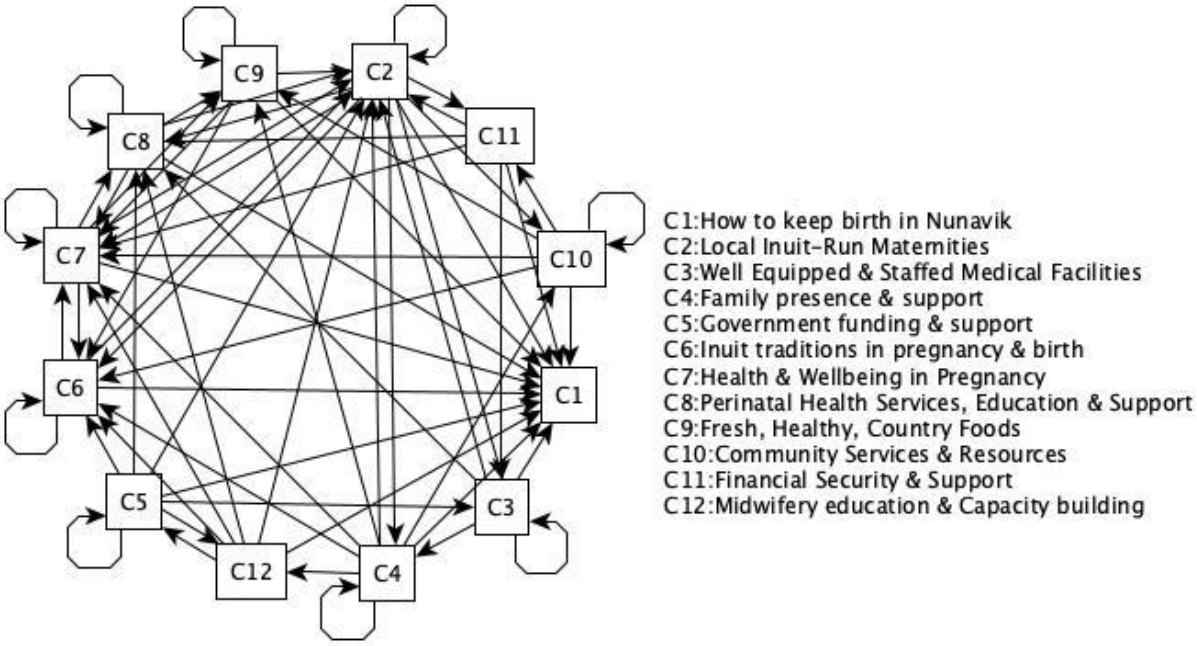

Table 1c. Adjacency matrix of the category map summarizing community visions of how to keep childbirth in Nunavik.

| | | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| How to keep birth in Nunavik | C1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Community Services & Resources | C10 | 0.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.07 | 0.00 | 0.07 | 0.03 | 0.03 | 0.00 |
| Financial Security & Support | C11 | 0.10 | 0.03 | 0.03 | 0.00 | 0.00 | 0.00 | 0.03 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 |
| Midwifery education & Capacity building | C12 | 0.27 | 0.37 | 0.00 | 0.00 | 0.03 | 0.03 | 0.03 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| Local Inuit-Run Maternities | C2 | 1.00 | 0.47 | 0.27 | 0.03 | 0.00 | 0.10 | 0.23 | 0.13 | 0.00 | 0.07 | 0.03 | 0.00 |
| Well Equipped & Staffed Medical Facilities | C3 | 0.97 | 0.27 | 0.43 | 0.07 | 0.00 | 0.00 | 0.00 | 0.23 | 0.00 | 0.00 | 0.00 | 0.00 |
| Family presence & support | C4 | 0.17 | 0.13 | 0.00 | 0.10 | 0.00 | 0.07 | 0.10 | 0.00 | 0.03 | 0.03 | 0.00 | 0.03 |
| Government funding & support | C5 | 0.17 | 0.07 | 0.20 | 0.00 | 0.03 | 0.03 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.03 |
| Inuit traditions in pregnancy & birth | C6 | 0.43 | 0.07 | 0.00 | 0.00 | 0.00 | 0.07 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Health & Wellbeing in Pregnancy | C7 | 0.80 | 0.03 | 0.00 | 0.00 | 0.00 | 0.07 | 0.40 | 0.07 | 0.03 | 0.00 | 0.00 | 0.00 |
| Perinatal Health Services, Education & Support | C8 | 0.37 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.17 | 0.10 | 0.10 | 0.00 | 0.00 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fresh, Healthy, Country Foods | C9 | 0.33 | 0.03 | 0.00 | 0.00 | 0.00 | 0.03 | 0.13 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 |

Legend: The numbers in the cells represent the cumulative net influence of one category on another, where 1 is the highest influence in the map

APPENDIX 2

Table 2a. List of unique factors and their corresponding categories for maps about giving birth in a good way in Nunavik.

| Factor Code | Factor Name | Category Name | Category Code |
|---|---|---|---|
| F01 | Birth in a good way in Nunavik | Birth in a good way in Nunavik | C1 |
| F49 | Preplanning pregnancy | Perinatal Health Services, Education & Support | C10 |
| F34 | Preventing Family Violence | | |
| F09 | Perinatal care & Counselling | | |
| F11 | SIPPE services | | |
| F29 | Continuity of care | | |
| F33 | Emotional support for perinatal loss | | |
| F48 | Sex education | | |
| F61 | SIPPE Coupons | | |
| F68 | Resources for parents | | |
| F19 | Safe home environment | Safe & Comfortable Housing | C11 |
| F44 | Safe neighbourhood | | |
| F10 | Cultural training for southern staff | Supportive & Well-trained Medical Staff | C12 |
| F21 | Supportive perinatal staff | | |
| F38 | No miscommunication between patient-staff | | |
| F26 | Women's active community participation | Empowerment & Self-Determination for Inuit | C13 |
| F27 | Women-centered services | | |
| F31 | Inuit health data | | |
| F36 | Choice in place of birth | | |
| F37 | Birth in Province | | |
| F57 | Strong Inuit Identity | | |
| F58 | Updated JBNQA | | |
| F04 | Family presence & support | Family & Community Support Network | C2 |
| F60 | Strong community ties | | |
| F35 | Emotional support throughout pregnancy | | |
| F39 | Quality time between mother and partner | | |
| F67 | Respecting their partner | | |
| F54 | Birth plan for family support | | |
| F40 | No financial stress | Financial Security & Support | C3 |
| F45 | Financial support | | |
| F55 | Affordable goods | | |
| F56 | Financial security | | |

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|---|---|---|---|
| F63 | Baby material support | | |
| F06 | Healthy/Country Food | Fresh, Healthy, Country Foods | C4 |
| F12 | Reducing alcohol or drugs | Health & Wellbeing in Pregnancy | C5 |
| F13 | Being physically active | | |
| F22 | Self-care & health in pregnancy | | |
| F23 | Listening to medical providers | | |
| F41 | Dental care | | |
| F46 | Good iron in pregnancy | | |
| F50 | Feeling comfortable & confident | | |
| F62 | Good mental health | | |
| F64 | Being a healthy role model in pregnancy | | |
| F65 | Positive thinking in pregnancy | | |
| F25 | Clean water access | | |
| F05 | Teachings from elders | Inuit traditions & culture in pregnancy & birth | C6 |
| F16 | Birth in Inuktitut | | |
| F17 | Birth at home | | |
| F24 | Birth in Inuit traditions | | |
| F30 | Pride in Inuit identity | | |
| F42 | Living according to spiritual beliefs | | |
| F51 | Sewing activities | | |
| F52 | Less medicalized birth | | |
| F53 | Oral teaching for perinatal counselling | | |
| F66 | Community & Family Celebrations after Birth | | |
| F14 | Inuktitut interpreters | Well Equipped Medical Facilities & Services | C7 |
| F08 | Well-equipped medical facilities | | |
| F15 | More perinatal medical staff | | |
| F18 | Adequate clinical space | | |
| F20 | Comfortable Transit House | | |
| F43 | Transport only for pregnant women | | |
| F47 | Proper medications & health treatments | | |
| F28 | Timely transfer to MTL | | |
| F50 | Birth in Kuujjuaq instead of Montreal | | |
| F32 | Government funding for local healthcare | | |
| F02 | Local midwifery services | Local midwifery services & maternity | C8 |
| F07 | Local Birthing Center | | |
| F03 | Midwifery education & Capacity building | Midwifery education & Capacity building | C9 |

Table 2b. List of unique factors and their corresponding categories for maps about maternal and family wellness during pregnancy and birth.

| Factor Code | Factor Name | Category Name | Category Code |
|---|---|---|---|
| F09 | Family wellness during pregnancy & birth | Supporting Family Wellness in Pregnancy & Birth | C1 |
| F10 | Financial & material support | Financial & material support | C10 |
| F16 | More family presence | Emotional support & accompaniment for mothers | C11 |
| F15 | Labour support | | |
| F07 | Emotional support | | |
| F02 | Accompaniment | | |
| F25 | Taking care of the mother | Mothers are Supported and Stress-free | C2 |
| F24 | Support with household chores | | |
| F11 | General help & assistance | | |
| F08 | Encouraging water intake | | |
| F23 | Stress free home | Safe & Clean Home | C3 |
| F21 | Safe home without violence | | |
| F12 | Having a clean home environment | | |
| F20 | Prepare for baby's arrival | Perinatal Education & Preparation | C4 |
| F19 | Prenatal classes | | |
| F04 | Breastfeeding promotion | | |
| F26 | Increasing water intake | Health & self-care in pregnancy | C5 |
| F22 | Self-care in pregnancy | | |
| F18 | Physical exercise & activities | | |
| F17 | No reckless driving | | |
| F06 | Eating Healthy | | |
| F03 | Avoiding drugs & alcohol | | |
| F14 | Helping with the baby | Helping with childcare | C6 |
| F13 | Helping with childcare | | |
| F01 | Access to healthy/country food | Access to country food | C7 |
| F05 | Doing healthy activities | Healthy Family Activities | C8 |

Table 2c. List of unique factors and their corresponding categories for maps about keeping childbirth in Nunavik

| Factor Code | Factor Name | Category | Category Code |
|---|---|---|---|
| F01 | How to keep birth in Nunavik | How to keep birth in Nunavik | C1 |
| F02 | Local (Inuit) midwifery services | Local Inuit-Run Maternities | C2 |
| F07 | Local Birthing Center | | |
| F04 | Ultrasound services | Well Equipped & Staffed Medical Facilities | C3 |
| F08 | Adequate medical equipment | | |
| F09 | Bigger hospital/ clinical space | | |
| F16 | Local hospital/medical facilities | | |
| F17 | More medical staff | | |
| F26 | Challenger access | | |
| F11 | Family presence & support | Family presence & support | C4 |
| F12 | Government funding & support | Government funding & support | C5 |
| F22 | Advocacy for Nunavik-based birth | | |
| F41 | Health service policy changes | | |
| F05 | Sensitization of Qallunaat | Inuit traditions in pregnancy & birth | C6 |
| F10 | Birth at home | | |
| F14 | Inuit traditions in birth | | |
| F15 | Inuk Doula | | |
| F23 | Arnaqutik/sanajik* | | |
| F25 | Birth in Inuktitut | | |
| F34 | Elder's guidance | | |
| F48 | Teachings on birth as natural | | |
| F13 | Healthy pregnancy (mother & baby) | Health & Wellbeing in Pregnancy | C7 |
| F18 | Mother has low stress | | |
| F19 | Physical exercise & outdoor activities | | |
| F20 | Self- care in pregnancy | | |
| F28 | Clean home | | |
| F38 | Good mental health | | |
| F42 | Healthy activities | | |
| F43 | Healthy home environment | | |
| F44 | Listening to midwife | | |
| F45 | No family violence | | |
| F21 | SIPPE program | Perinatal Health Services, Education & Support | C8 |
| F30 | Continuity of perinatal care | | |
| F33 | Education on healthy living | | |

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|---|---|---|---|
| F39 | Good perinatal care | | |
| F46 | Postpartum home care | | |
| F47 | Regular prenatal care | | |
| F06 | Healthy/Country Food | Fresh, Healthy, Country Foods | C9 |
| F24 | Better housing | Community Services & Resources | C10 |
| F27 | Childcare services | | |
| F29 | Community freezer | | |
| F31 | Drinking water | | |
| F32 | Education in school on healthy living | | |
| F35 | Family house | | |
| F36 | Family transit houses in Nunavik | | |
| F40 | Gym in village | | |
| F49 | More resources for parents | | |
| F50 | Transportation | | |
| F37 | Financial support | Financial Security & Support | C11 |
| F03 | Midwifery education & Capacity building | Midwifery education & Capacity building | C12 |