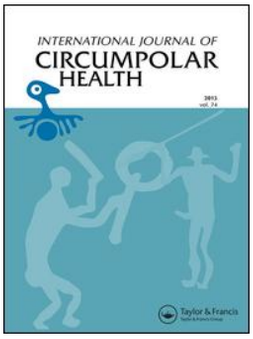

International Journal of Circumpolar Health

ISSN: (Print) 2242-3982 (Online) Journal homepage: https://www.tandfonline.com/loi/zich20

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To cite this article: Linda Larcombe, Lancelot Coar, Matthew Singer, Lizette Denechezhe, Evan Yassie, Tony Powderhorn, Joe Antsanen, Kathi Avery Kinew & Pamela Orr (2020) Sekuwe (My House): building health equity through Dene First Nations housing designs, International Journal of Circumpolar Health, 79:1, 1717278, DOI: 10.1080/22423982.2020.1717278

To link to this article: https://doi.org/10.1080/22423982.2020.1717278

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INTERNATIONAL JOURNAL OF CIRCUMPOLAR HEALTH
2020, VOL. 79, 1717278
https://doi.org/10.1080/22423982.2020.1717278

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Sekuwe (My House): building health equity through Dene First Nations housing designs

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ABSTRACT

The Truth and Reconciliation Commission of Canada determined that the Dene people, among other Indigenous groups, experienced cultural genocide through policies that separated them from their lands and resources, and from their families, languages, cultures, and by forcibly sending children to Indian Residential Schools. The resultant social inequity is manifested in conditions of social injustice including inadequate housing. The Dene healthy housing research was a continuing partnership between the two Dene First Nation communities, the university and a provincial First Nation non-government organisation. This project engaged the creative energies of university students and Dene senior-high students to create and articulate Dene healthy housing so that concepts/plans/designs are ready for future funding interventions. We co-developed methods and networks to reframe housing as a social determinant of health and an important factor in social justice. This project reflects the fundamental requirement for a respectful understanding of Dene perspectives on housing and health and the need for Dene control over their built environment.

ARTICLE HISTORY
Received 12 June 2019
Revised 27 September 2019
Accepted 16 October 2019

KEYWORDS
Health; housing; First Nations; architecture; culturally appropriate

Introduction

In 2010 Chief Joe Dantouze of the Northlands Denesuline First Nation in the Canadian province of Manitoba addressed a Parliamentary committee regarding the living conditions in his community by quoting Article 25 of the Universal Declaration of Human Rights which states that "everyone has the right to an adequate standard of living for the health and well-being of himself and of his family, including food, clothing, housing and medical care … " [1]. His comments were made in the context of a government investigation into the high rates of tuberculosis experienced by First Nations communities in Canada. Chief Dantouze identified crowded and poorly ventilated houses as a major determinant of ill health among his peoples, tuberculosis being only one of many adverse health conditions resulting from neglect of housing as a basic human right in many First Nations communities.

First Nations peoples in northern Canada relied on their own ingenuity, resources and social-economies to provide housing for themselves for thousands of years. Their resourcefulness and resilience are particularly remarkable when considered within the context of government laws, policies and actions over the past two centuries that have resulted in what Canada's Truth and Reconciliation Commission (TRC) describes as forms of physical, biologic and cultural genocide. (TRC, 2015). Systemic racism, the establishment of residential schools, the destruction of First Nation cultural practices, languages, and political systems, the seizure of and forced relocation from traditional land and access to traditional resources, have resulted in conditions of social, economic and political inequity that are currently experienced by many First Nations peoples today.

For the Dene First Nations peoples of northern Manitoba, inadequate housing has been a major health concern since their forced relocation from traditional lands in the last century. Endemic and epidemic tuberculosis was one of the many health conditions resulting from crowded and poorly ventilated houses. Northlands Denesuline and Sayisi Dene experienced tuberculosis epidemics between 1975–84 (incidence >1000/100,000) and

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again from 1990–94 (incidence >600/100,000) [2,3]. Elevated morbidity and mortality due to influenza and other respiratory diseases, diarrhoeal and skin and soft tissue infections, mental and social distress have also been associated with poor housing conditions in First Nations communities [4–11].

In 2004 a partnership was formed between the two Manitoba Dene communities of Northlands Denesuline at Lac Brochet, and the Sayisi Dene at Tadoule Lake, with physicians and researchers at the University of Manitoba in order to holistically address the social and biologic determinants of health and illness [12–15].

In a series of discussions, the two Dene communities voiced concerns about the limited number of houses available, with resultant crowding, and the evidence of poor construction quality, resulting in poor ventilation and widespread need for repair. They also expressed dismay at the lack of attention to Dene cultural values in construction design, and insufficient appreciation of the link between cultural values and well-being [12,16]. The communities requested initiation of a study to explore housing interventions that support and improve health, as seen through the lens of First Nations ways of knowing.

Arising from these discussions, this community-based participatory action research study was undertaken from 2013 to 2016 through a partnership between the University of Manitoba (Departments of Internal Medicine and Architecture), the two Dene First Nations and the Assembly of Manitoba Chiefs (AMC), a political and advocacy organisation. It was led by the two First Nations and followed Dene cultural ways. The Chiefs and Councils appointed their own research assistants. The research followed OCAP principles: First Nations Ownership, Control, Access and Possession (OCAP) of their own data [17].

The project goals were: to **Discover** how the Dene, other First Nations and Indigenous groups, policy makers, and researchers envision the intersection of culture, health and housing; **Envision** and articulate Dene traditional concepts of healthy housing; and use the creative energies of university students and Dene senior-high students to **Create** and articulate Dene healthy housing so that concepts/plans/designs can be ready for future funding interventions. Our objective was to use the strengths of each of the partners to model a process for creating housing designs for the Dene communities that would better reflect their culture, their way of living, and their values. In this paper we present the research process and the themes of Dene healthy housing that emerged from study. The actual designs of houses that emerged from the study have been published in book form, and are not presented here [18].

The current and historical context of Dene First Nations in Manitoba, Canada

There are 63 First Nations Reserve communities in Manitoba. Two of them are Dene communities – the Northlands Denesuline First Nation and the Sayisi Dene First Nation. The communities today each have a school, a nursing station, health office, airport, a grocery store and day-care. Stick-frame houses have been built in a Euro-Canadian design since the 1970s. There are no all-season roads to these communities. Access is by airplane, or in the winter on an ice road.

The Dene people are part of the larger Athabaskan language family which also includes the Dine (Navajo) in the southern United States of America [19,20]. Many Dene people in Manitoba have preserved their traditional way of living involving caribou hunting and fishing, and their cultural values and beliefs [13,15]. Traditionally the Dene people were highly mobile and moved throughout northern Canada to harvest caribou, fish and other resources for food and clothing [21,22]. Historically, the Dene erected temporary shelters in the shape of domes when travelling. These made use of environmental materials, including spruce bushes and animal skins [23]. In the winter some Dene groups constructed shelters with a base that was dug a metre into the ground, with spruce bows or split logs covering the soil. Wooden posts supported a roof of birch bark, moss and/or sod [23].

By the middle of the last century the Dene people experienced pressure to resettle in established communities [24–27]. The Canadian government indicated that their action was based on concern regarding food securing and access to government services [24]. The forced relocations caused significant social, economic, and psychological hardships.

Current housing conditions and health experienced by Dene First Nations

In 2016, the population of Denesuline First Nation at Lac Brochet was 725 people living in 170 houses; 32% of houses have more than one persons per room [28]. The population of the Sayisi First Nation at Tadoule Lake was 324 people living in 120 houses; 8.3% of houses have more than one persons per room [28]. By comparison, the mean persons per room in the province of Manitoba at that time was 0.5 [12].

Northlands and Sayisi, like all First Nations, must apply to the government for funding for housing. The Band, not individuals, owns the houses. Community Councilors and a Chief, who are elected by Band (community) members,

provide local governance. The Band has very little control over the amount of funding granted for housing.

Construction frequently is of insufficient quality to withstand the harsh subarctic environment [29]. In a 2007 study of housing in Lac Brochet, mould was observed in 44% of houses studied. Mean house size was 212 square feet per person, compared to the provincial average of 413. Eighty-five percent of houses had significant structural damage such as damaged roofs, walls and ventilations systems. Forty-one percent of houses were heated only by wood stove. At Tadoule Lake crowding was less severe but 4% of the houses did not have running water or sanitation facilities [30].

The houses funded by the government are of southern design and use southern materials. Opportunity for local input regarding housing design is lacking, spaces are therefore multifunctional by necessity. Processing and drying caribou meat occurs in the living room or kitchen. Hides are stretched and dried and fish are cleaned on the porch. Mattresses are spread out on the living room floor or sleeping occurs in shifts [31]. There is little connection between housing sites and the local environment. The primary considerations for the location of houses has been access to utilities and roads, resulting in homes that fill with dust in the summer and are highly exposed to wind and snow in the winter.

Methods

The research involved interconnected phases of "discovery", "envisioning" and "creating". The "two-eyed seeing" of both Dene and non-Dene "western" perspectives of Dene housing design was a central theme for the project [32].

Approvals for this project were obtained from the Chiefs and Councilors from the participating First Nation communities and the University of Manitoba Ethics Review Board (H2014:053). All individual participants provided written informed consent. Each Chief and Council established a study Dene Housing Task Force.

Discovering

The initial phase consisted of community consultation and constructive engagement of university students, Dene community members, high school students and other stakeholders. The goal was to use collaborative and participatory methods to elicit and describe Dene concepts of housing that supports and promotes individual, family and community wellbeing from a holistic point of view.

"Housing Week" events were held in both communities focusing attention on Dene housing designs through feasts, workshops, meetings, contests, and a craft night. Led by local research assistants and assisted by translators, the workshops provided opportunities to discuss their perceptions, experiences, needs, desires and ideas regarding housing. Campfire dinners and daytime workshops were held for Dene youth to talk about housing. At each community a "Craft Night" was held during which adults, Elders, youth and children created "Dene style" houses using arts and craft materials.

Envision and create

In the second year of the study, an exchange programme took place between students from the Dene communities and the Faculties of Architecture and Health Sciences at the University of Manitoba took place. Dene students were required to submit a formal application and a short essay about their experience with housing conditions and ideas for how to improve the situation. Ten Dene students were selected by the Band Council to participate in the exchange programme.

University students in the Department of Architecture applied to participate in the project, which was incorporated into university course work. Prior to travelling north, they studied Dene history, culture and technology and cultural safety.

The architecture students visited each community in order to learn about each community's history, and current realities related to health, housing, and traditional activities. Students participated in activities such as caribou hunting, food practices including the butchering and smoking of meat, fishing, drumming, singing, hand games, and community feasts thereby contributing to their understanding of the need to build structures that support such activities. Students toured houses to review construction quality and design and to discuss with residents what local materials for construction were available.

The Dene students were trained to use digital cameras and video recorders to document Housing Week events for use at conferences and meetings. In a modified photo voice activity, they took photographs of their houses to inform reports that they used for school assignments and for book publication.

After Housing Week the Dene students travelled south from their home communities to the Department of Architecture at the University of Manitoba in Winnipeg, where they spent a week working with the architecture students to provide input and feedback on the initial designs. They visited the Faculties of Medicine and Dentistry at the University of Manitoba, the campus of

University of Winnipeg and the Manitoba Museum of Human Rights as part of an educational experience that exposed them to post-secondary career opportunities.

The housing designs were then finalised, models were created and detailed images (structural plans, technical designs, exterior and interior renderings etc.) of ten houses were created. These designs were presented for feedback to the members of each First Nation community. Using this feedback, the students of architecture were able to finalise their designs and present them to the authors' institution and to the communities.

Results

Dene healthy housing design elements

Five important themes were identified in the course of the research and workshops that were incorporated into the designs – material identity, cultural design integration, energy independence, food security and long-term maintenance. These themes, along with the actual student designs, were published in a book entitled "*Sekuwe (My House). Dene First Nation's Perspectives on Healthy Homes*" [18].

Material identity

For many Dene, the issue of selecting what housing materials reflects a deep connection to their history, teachings, and regional identity. Community members referred to a time when homes were literally made "of the land" by their people. In this project several community members expressed a disconnect with the materials used to build modern homes. Drywall was highlighted as being "cold" and "impersonal". While the comforts and convenience of contemporary homes were appreciated and desired, the material choices for the finished homes were not always wanted. Several community members expressed a desire to see more exposed materials – namely unpainted wood. The use of natural wood also conjures a cultural affinity to the wood used to build the homes that were used to settle these communities. The advantage of using local materials (like wood) is that it creates local jobs for harvesting and preparing the materials; it creates a local connection for the homes to the land, and offers a unique material quality to the finish of the buildings if desired.

Cultural design integration

Members of both communities described a desire to have more public and private spaces amenable to traditional Dene practices. The unique histories and contemporary lifestyles of the Dene people in northern Manitoba are not supported by the housing design currently being built in these communities. The traditions of caribou hunting and butchering, craft making, smoking meat, tanning, large community gatherings, hand-games, among others are not supported in current homes. In some cases, these practices which are central to the Dene identity (like hunting, butchering, and preparing of traditional foods like the caribou) can create unhealthy conditions due to excess moisture, and animal remains processed in living spaces. In the past Dene shelters were warm, dry, temporary and mobile because they followed and relied on the caribou. Community members reported that in the past, "We had to be physically active to survive". Today they their houses are immobile, damp and sometimes without heat. They have to rely on "southern" food provided by the local store, but caribou and fish are still preferred. Some culturally significant social activities take place in the Band Community Hall and local school because of the lack of flexible space anywhere else on the reserves. At times spaces within the homes would be crowded to support social activities such as larger family gatherings, feasts, and hand games.

The projects recommend that the homes designed for Dene communities should take into consideration the lifestyle of the various family members living in the homes. Activities which help to transfer history, skills, traditional knowledge, and cultural identity should be strongly encouraged through flexible spaces and appropriate utilities and resources within the home (i.e. sanitary areas for meat preparation, waste and water locations, and proper ventilation to support food production activities).

Energy independence

Because the homes in both communities are situated in the very cold climate of northern Manitoba, energy efficiency and reliability are of central concern. Current energy needs for homes are supplied almost entirely by furnaces that run on diesel brought in by a winter road that ravels in part over ice-covered lakes. The diesel furnace has replaced almost all the traditional wood-stoves, at the insistence of the provincial electric utility and federal government, and now which many Dene prefer due to the even quality of the diffusion of heat. However because of a lack of education, training, supplies, and supervision these furnaces often break down and can create life-threatening challenges for families in the winter months. In addition, the pleasures offered by a wood-stove fire as well as the quality of a central heat source, that promotes family gathering, is lost with a distributed heat system. While diesel furnaces have brought modern convenience to homes, they have also created a disconnect with the traditions of harvesting,

gathering, and saving wood for the winter, which offer energy independence, security, money savings, and employment for many of the younger/able bodied members of the community. These furnaces have also created numerous challenges including damaged tanks causing oil leaks that have contaminated groundwater supplies and oil supply disruptions that have left numerous families without heat in the deep of winter. Local expertise in fixing such furnaces is limited, requiring mechanics to be flown in.

Energy efficiency in homes in these communities is another challenge. Many homes have insufficient and ineffective insulation. Window placement and the orientation of the homes are frequently not planned to take advantage of the passive heat gain offered by the sun. Homes are also commonly positioned without consideration of the major wind corridors that draw heat out of a home and create uncomfortable drafts in the living spaces.

A number of the student designs propose that a back-up high-efficiency wood-stove be installed in all new homes. It would create an energy "safety net" for when the imported heat source is interrupted (due to premature melting of the ice road), supply breakdown, or when the furnace malfunctions. Additionally, it would create opportunities employment involving the gathering and distribution of wood. Finally, it would help to relieve some of the time-critical urgency for the band when working to fix a broken furnace. Many projects propose that homes should be designed to maximise passive heat gain and energy from the sun, including window placement, increase thermal heat storage in wall systems and organise house orientation to minimise exposure to prevailing winds.

Food security

While it may not be obvious, food security is directly related to housing design. Because of the remote nature of these reserves, the impact that homes have on food choices is significant. Two major food sources are currently available in the northern communities: 1. The local commercial retail, which provides imported "southern" food (primarily processed food in limited supply and at a high cost), and 2. wild food sources from the land (caribou, fish, berries and other plants). The often unhealthy and expensive food options at the retail store are linked to health problems for many including high cholesterol, diabetes, high blood pressure, and malnourishment. The traditions of hunting wild game offer a healthier food source providing rich nutritional value and a fresh quality diet. Additionally, hunting promotes traditional teachings to be shared, encourages exercise, builds life skills, offers food security, and helps to strengthen community bonding and cultural identity. Current house designs discourage traditional forms of food production because there are no spaces to support the necessary activities related to hunting and fishing, including preparing and storing traditional foods, and storing harvesting equipment

Most student projects attempted to integrate and even celebrate the needs of a proper space dedicated to butchering, cleaning, and meat preparation. Some designs also sought to encourage vegetable production with an adjoining greenhouse incorporated into the home. It was also recommended that education and healthy food programmes in the communities could help to promote small-scale food production in homes. By building-in these capabilities within a house design, it also helps to provide food security and money savings for the families with these facilities.

Long-term maintenance and repair of housing

The primary voiced concern among adult community members related to inadequate housing maintenance. Small problems that required minor maintenance attention compounded and became much more significant problems affecting the health and safety of the families in these homes.

Student projects focused on housing design and construction that would allow for ongoing maintenance provided by trained community members. In addition, householders should be fully involved in the design and construction so they are able to identify inevitable maintenance issues and preventative care through education.

Discussion

Through its conception, initiation and methods this project aligns with the TRCs call to close gaps in equity and health outcomes, as well as with the call for self-determination in the United Nations Declaration on the Rights of Indigenous Peoples for self-determination [33].

Housing is not only recognised as a basic human right (UN 2002,2012) but also a fundamental determinant of health [34–36]. The U.S National Centre for Healthy Housing (NCHH) has outlined primarily physical principles or qualities that describe healthy homes, including dryness, cleanliness, ventilation, freedom from pests and contaminants, safety, good maintenance and thermal control [37]. However, housing design is also crucial to the support of mental and cultural health [18,38]. Housing that supports health is more than "shelter". Factors encompassing quantity and quality of construction, safety, design and cultural relevance are of critical important to

Indigenous views of the social, emotional, physical, mental and environmental components of wellness [38–41].

Healthy housing promotes social inclusion and the growth of social networks, services, educational and employment opportunities [41]. Cross-cutting collaboration is common in efforts to improve societal equity with regard to housing, but in particular, guidance and input from community members is fundamental to achieving meaningful results [42]. The Canadian government does not consider housing to be a constitutionally entrenched indigenous treaty right [43,44]. Instead, the Federal government's Indigenous Services of Canada and the Canada Mortgage and Housing Corporation (CMHC) offer support and assistance through loans and grants, and sometimes training. CMHC has a framework for providing capital to First Nations for new construction, maintenance, insurance, debt servicing and housing management [45]. Nationally, the funding for housing has remained relatively constant despite the increasing First Nation population. This funding structure precipitates total control by the federal government, first by federal budgets, polices and regulation, and secondly at the regional level in decisions regarding setting priorities and deciding "worthiness" of proposals or even of First Nations [39,46].

While it is relatively easy to identify what is wrong with First Nation housing, solutions are not as easy to come by and issues around housing are complicated by the politics, economics and historical management processes at all levels (community through to the federal government). Of particular interest for First Nation people is building skills, knowledge and opportunity for youth to be leaders in self-government, in building health equity, and in taking charge of local conditions.

In their research agenda, the NCHH has called for interventional studies to discover and create housing that supports health [37]. This study was interventional in so far as it brought together apparently disparate groups to envision a healthy built environment for their communities. However, the project remains only a first step until the designs are transmitted to blueprints, and the blueprints to construction, and the construction to available homes.

Conclusions

Like many First Nations communities, the Dene have a deep knowledge and understanding about what does and does not work in their community and environment. In this study, indigenous and non-indigenous people and organisations that are active in the promotion of social justice and equity may use the housing designs and the collaborative process by which they were developed.

Currently in Canada, there are renewed calls for sustainable and adequate funding for housing in Indigenous communities. It is clear that our job, as researchers committed to addressing the TRC calls to action through community development and Community Based Participatory Action Research methods – and as people who share the Dene land and resources and do not accept their state of oppression – is to learn how to listen in our practice, and to merge traditional knowledge with the outside and continuing hegemonic perspectives, including the complex and evolving building industry. This research gives voice to the Dene desire for houses that incorporate their cultural, environmental and spiritual ways of living and being well. The Dene people are taking the lead in envisioning and pursuing healthy housing that sustain their cultural needs, their health and the local environment.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This research was funded by the Canadian Institutes of Health Research.

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References

[1] House of Commons Standing Committee on Health. The way forward: addressing the elevated rates of tuberculosis infection in On-Reserve First Nations and Inuit communities. 40th Parliament, 3rd Session [Internet]. 2010 [cited 2019 Jan 3]. Available from: http://caid.ca/SCOH04Rep2010.pdf

[2] Olson L. A comparative study on the incidence of tuberculosis among status Indians and other selected groups in Manitoba, Canada. Winnipeg: Department of Community Health Science University of Manitoba; 1999.

[3] Lodge A, Orr P, Larcombe L, et al., editors. Tuberculosis in a remote Canadian Dené community: the impact of virulence, genetic and environmental factors on epidemiology and control. Congress on 13th International Circumpolar Health; Novosibirsk, Siberia; 2006.

[4] Dales R, Miller D, McMullen E. Indoor air quality and health: validity and determinants of reported home dampness and moulds. Int J Epidemiol. 1997;26:120–125.

[5] Kovesi T, Creery D, Gilbert NL, et al. Indoor air quality risk factors for severe lower respiratory tract infections in Inuit infants in Baffin region, Nunavut: a pilot study. Indoor Air. 2006;16(4):266–275.

[6] Dunn JR. Housing and inequalities in health: a study of socioeconomic dimensions of housing and self reported

health from a survey of Vancouver residents. J Epidemiol Community Health. 2002;56(9):671–681.
[7] Curtis T, Kvernmo S, Bjerregaard P. Changing living conditions, life style and health. Int J Circumpolar Health. 2005;64(5):442–450.
[8] Clark M, Riben P, Nowgesic E. The association of housing density, isolation and tuberculosis in Canadian First Nations communities. Int J Epidemiol. 2002;31:940–943.
[9] Hayward P, Martin B, Hazelton P, et al., editors. Acute infectious diarrheal illness in a First Nations community in Northern Manitoba, Canada: epidemiology and the impact of water, sanitation, and housing. 14th International Congress on Circumpolar Health; Yellowknife, Canada; 2009.
[10] Rosenberg T, Kendall O, Blanchard J, et al. Shigellosis on Indian Reserves in Manitoba, Canada: its relationship to crowded housing, lack of running water and inadequate sewage disposal. Am J Public Health. 1997;87 (9):1547–1551.
[11] Stuart T, Lindegger M, Nibjoarsi D, et al. CA-MRSA outbreak in Nunavut, Canada: knowledge of social networks is key to targeting control measures. 14th International Congress on Circumpolar Health; Yellowknife, NWT 2009. p. 86.
[12] Larcombe L, Orr P Housing conditions which serve as risk factors for tuberculosis infection and disease. Public Health Agency of Canada, editor. Canadian Communicable Diseases Report; 2007.
[13] Larcombe L, Mookherjee N, Slater J, et al. Vitamin D in a northern Canadian First Nation population: dietary intake, serum concentrations and functional gene polymorphisms. PloSOne. 2012;7(11):e49872.
[14] Larcombe L, Orr P, Lodge A, et al. Functional gene polymorphisms in Canadian Aboriginal populations with high rates of tuberculosis. J Infect Dis. 2008;198:1175–1179.
[15] Slater J, Larcombe L, Green C, et al. Vitamin D and the nutrition transition in a northern Dene community. Int J Circumpolar Health. 2013;72:20723.
[16] Standing Committee on Health. House of Commons Canada. Chief Joseph Dantouze Northlands denesuline first nation evidence. HESA number 010, Third Session, 40th Parliament [Internet]. 2012 [cited 2012 Nov 9]. Available from: http://www2.parl.gc.ca/content/hoc/Committee/403/HESA/Evidence/EV4443113/HESAEV10-E.pdf
[17] Lavallee M, Cook C, Kinew KA, et al. Framework for research engagement with First Nation, Metis, and Inuit peoples 2013 [cited 2019 Jan 4]. Available from: http://umanitoba.ca/faculties/health_sciences/medicine/media/UofM_Framework_Report_web.pdf.
[18] Larcombe L, Coar L. Sekuwe (My House): Dene First Nation's perspectives on healthy homes. Winnipeg, MB: Friesen's Press; 2018. Available from: http://ecohealthcircle.com/wp-content/uploads/2019/03/Sekuwe-2018.pdf
[19] Helm J. The people of Denendeh. Ethnohistory of the Indians of Canada's Northwest Territories. Iowa City: University of Iowa Press; 2000.
[20] Seymour DJ. From the land of ever winter to the American Southwest: Athapaskan migrations, mobility, and ethnogenesis. Salt Lake City: University of Utah Press; 2012. p. xii, 443.
[21] Nash RJ. Archaeological Investigations in the transitional forest zone: northern Manitoba, Southern Keewatin. Winnipeg, MB: Manitoba Museum; 1975.
[22] Sayisi Dene First Nation. Sayisi Dene comprehensive community plan. 2016.
[23] Abel K. Drum songs: glimpses of Dene history. Buffalo, N. Y.: McGill-Queen's University Press; 1993.
[24] Bussidor I, Bilgen-Reinart U. Night Spirits: the story of the relocation of the Sayisi Dene. Winnipeg, MB: University of Manitoba Press; 1997. p. xxii, 152.
[25] Petch V. The relocation of the Sayisi Dene of Tadoule Lake. Prepared for The Minister of Supply and Services and The Royal Commission On Aboriginal Peoples [Internet]. 1995 [cited 2018 Aug 19]. Available from: http://data2.archives.ca/rcap/pdf/rcap-148.pdf
[26] Petch V. Relocation and loss of homeland, the story of the Sayisi Dene of northern Manitoba. Winnipeg, MB: University of Manitoba; 1998.
[27] Pelly D. The old way north following the Oberholtzer-Magee expedition. Minnesota historical society, editor. St. Paul: Borealis Books; 2008.
[28] Statistics Canada. Aboriginal population profile 2016 census. 2016 [cited 2019 Aug 12]. Available from: https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/abpopprof/details/page.cfm?Lang=E&Geo1=AB&Code1=2016C1005336&Data=Count&SearchText=Northlands%20Denesuline%20First%20Nation&SearchType=Begins&B1=All&GeoLevel=PR&GeoCode=2016C1005336&SEX_ID=1&AGE_ID=1&RESGEO_ID=1.
[29] Patterson D, Dyck L. On-Reserve housing and infrastructure: recommendations for change. Standing Senate Committe on Aboriginal Peoples Report of the Standing Senate Committee on Aboriginal Peoples [Internet]. 2015 [updated 2019, Mar 20; cited 2019, Nov 20]. Available from: http://www.sen.parl.gc.ca/
[30] Boutilier D Housing as a determinant of health in The Sayisi Dene First Nation, Tadoule Lake, Manitoba [Master of Arts]. Winnipeg, MB: Department of Anthropology University of Manitoba; 2013.
[31] Larcombe L, Nickerson P, Singer M, et al. Housing conditions in two Canadian First Nations communities. Int J Circumpolar Health. 2011;70(2):141–153.
[32] Marshall A, Bartlett C Two-eyed seeing 2007. Available from: http://www.integrativescience.ca/uploads/articles/2010September-Marshall-Bartlett-Integrative-Science-Two-Eyed-Seeing-environment-sustainability-Aboriginal.pdf
[33] United Nations. United nations declaration on the rights of Indigenous peoples 2007 cited 2019 Jan 12]. Available from: https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html
[34] Thomson H, Thomas S, Sellstrom E, et al. The health impacts of housing improvement: a systematic review of intervention studies from 1887 to 2007. Am J Public Health. 2009;99(Suppl 3):S681–92.
[35] Howden-Chapman P, Pierse N, Nicholls S, et al. Effects of improved home heating on asthma in community dwelling children: randomised controlled trial. Br Med J. 2008;337: a1411.
[36] Jacobs DE, Brown MJ, Baeder A, et al. A systematic review of housing interventions and health: introduction, methods, and summary findings. J Public Health Manag Pract. 2010;16(5 Suppl):S5–10.

[37] National Center for Healthy Housing. National healthy housing standard, 2019 [cited 2019 Sept 2]. Available from: https://nchh.org.
[38] Christensen J. No home in a homeland: Indigenous peoples and homelessness in the Canadian North. No Home Homeland. 2017;1–290.
[39] Indian and Northern Affairs Canada. Highlights from the report of the royal commission on Aboriginal peoples: people to people, Nation to Nations 1996 [cited 2019 Jan 3]. Available from: http://www.ainc-inac.gc.ca/ch/rcap/sg/sgmm_e.html.
[40] Moloughney B. Housing and population health: the state of current research knowledge. Ottawa: Canadian Institute for Health research; 2004.
[41] MacKinnon S. Housing: a major problem in Manitoba. In: Fernandez L, MacKinnon S, Silver J, editors, 139–149. The social determinants of health in Manitoba. Winnipeg, MB: Hignell Press; 2010.
[42] Fernandez L, MacKinnon S, Silver J. The social determinants of health in Manitoba: an introduction. In: Fernandez L, MacKinnon S, Silver J, editors, 1–5. The social determinants of health in Manitoba. Winnipeg, MB: Canadian Center for Policy Alternatives; 2010.
[43] Office of the Auditor General of Canada. Chapter 4 programs for First Nations on Reserves. Status Report of the Auditor General of Canada to the House of Commons [Internet]. 2011 cited 2018 Dec 20. Available from: http://www.oag-bvg.gc.ca/internet/English/parl_oag_201106_04_e_35372.html
[44] Office of the Auditor General of Canada. Access to health services for remote First Nations communities 2015 [cited 2019 Jan 5]; (Report 4). Available from: www.oag-bvg.gc.ca].
[45] Canada Mortgage and Housing Corporation. With a feature on housing finance. Canadian housing observer 2011 [Internet]. 2011 [updated 2018, Jan 3; cited 2012 Nov. 15]. Available from: https://www03.cmhc-schl.gc.ca/catalog/productDetail.cfm?cat=122&itm=22&lang=en&fr=1352991107000.
[46] Cardinal H. The unjust society: the tragedy of Canada's Indians. Edmonton AB: M.G. Hurtig; 1969.