

Methods

This exploration is based on a review of the literature, supported by a research team working on Inuit health in Winnipeg, connected to Elders and Inuit-based organisations. Novel understandings on Inuit knowledge were provided from an Elder, Tagaaq Evaluardjuk-Palmer, who is co-author on this paper. Discussions took place via video-conferencing. We worked collaboratively to produce this paper, where I presented each draft back until we were both satisfied with the outcome. This collaborative process is outlined in Figure 1.

Data was found using Google Scholar through the search terms ‘Inuit health and climate change’, ‘Inuit environment and health’ and ‘Inuit climate change adaptations’ where 57 records were identified. These were sorted thematically by manually sorting each category by highlighting relevant information on climatic impacts and climatic adaptations (split into the themes of: mental health, food and water insecurity, disease, respiratory illness, ice-related accidents). A semi-ethnographic approach, adapted from traditional anthropological ethnography was used, guided by discourse analysis.



Figure 1: Collaborative working process

Inuit Qaujimaqatqangit, being ‘healthy’ and the Environment

“All-encompassing holistic view of an interconnected world” (Tagalik, 2018: 94)

Inuit Qaujimaqatqangit (IQ) translates as *“that which Inuit have known all along”* encompassing Inuit worldview through stories, teachings and myths linking the past and future together (Kalluak, 2017: 41) as a ‘living’ knowledge (Tagalik, 2009). Often, IQ has been sidelined by Western research as it was not recognised as ‘scientific’ enough; instead, the focus was on biomedical approaches (Ferrazzi et al., 2019; Wilson et al., 2020) that although helpful, fail to fully engage with complex questions requiring holistic, localized and longitudinal observations, at times over multiple generations. IQ is also metaphysically different from Western knowledge, and therefore comprehension in the context of Inuit culture, history and beliefs is needed (Wilson et al., 2020). A foundational belief of IQ rests in a profound relationship with nature and the connection it provides to their environment. For example, Elders have remarked that “when the Qallunaat² came, muskox and whales were hunted nearly to extinction” (Karetak & Tester, 2017: 15). Due to interconnected beliefs, qanuinnngitsiarutiksait cannot be understood without IQ. However, to fully conceptualise qanuinnngitsiarutiksait, deeper insight into the person is needed.

Inuit notion of the person

Pool and Geissler (2005) argue that personhood is understood culturally in various ways; personhood is not an artifact of the brain but is one of ‘life and experience’. Personhood is a dialogue between the projection of society onto the individual, and the individual forming their location in society. More fitting for this context is the concept ‘complex personhood’, allowing emphasis on more than the individual, e.g. family, community, the ancestors and the environment to become more prominent (ecocentrism). This allows a shift from a Western emphasis on

individuality, to understanding a more complete notion of the person (Dixon, 2017; Tuck, 2009), which arguably, is closer to Inuit philosophy.

Thus, Inuit conceptions of personhood, belonging and identity lie in their strong relationship with the environment. While connection to the Land is a key in maintaining qanuinnngitsiarutiksait, and therefore Inuit personhood, other factors are also integral; for example, cultural practices such as eating specific foods, speaking one's language and having a strong sense of community (Cunsolo Willox et al., 2013; Kirmayer et al., 2009). Gombay (2015) suggests that colonialism created 'colonised identities' as local norms defining aspects of personhood conflicted with coloniser's views of being, and colonisers viewed Inuit as 'uncivilised', lacking the qualities and benefits of Western personhood and consequently lacking the privilege of full citizenship, to be relegated to a subordinated 'ward of the state' like status. Colonialism, past and present continues to disrupt Inuit personhood and consequently identity and belonging. The literature has begun to explore the disconnect between Inuit and the environment associated with climatic impacts, but does not link historical and environment aspects.

Qanuinnngitsiarutiksait

The use of qanuinnngitsiarutiksait, visually displayed in Figure 2, pays homage to the cultural context of this exploration, and acknowledges that Inuit concepts of good health differ from biomedical concepts, and that past explorations have not embraced Inuit concepts. Qanuinnngitsiarutiksait roughly translates as 'good health and wellbeing', referring to a holistic all-encompassing idea of health which encompasses physical and mental health, cultural connection (e.g. Inuit Qaujimagatuqangit), spiritual connection, environmental connection (e.g. wellbeing of the household and the Land); it can also refer to tools used for health e.g. eating traditional foods. Elder Evaluardjuk-Palmer conveyed the sentiment that research needs to involve Inuit in the process, to ensure a broad understanding, rather than just investigating one issue or aspect. Another Elder, Taamusi Qumaq, suggested that good health and wellbeing means to *"live without worry, being able to move on the land with ease... hunt animals and eat the food they provide, and visiting and taking pleasure in the company of family and loved ones"* (cited in Fletcher et al., 2021: 18) reinforcing that qanuinnngitsiarutiksait encompasses factors of one's larger social setting, such as family, nature and community. This approach recognises more than one way of knowing or understanding the world, integral for work aiming to situate itself in a decolonised realm, allowing production of 'legitimate knowledge' (Liboiron, 2021).



Figure 2: Visual explanation of qanuinnngitsiarutiksait

Environment, Avatittingnik kamatsiarniq

“We lived on the land, off the land, for the land...what we took we could put back...my parents only took what they needed and lived for today” (Elder Evaluardjuk-Palmer, personal communications)

Although the environment is part of ‘Inuit determinants of health’ (ITK, 2014), it is mostly disregarded in non-Indigenous contexts (Harper et al., 2015). Some anthropologists and geographers have engaged with this concept as an avenue to guide health-related research (Kurtz & Smoyer-Tomic, 2009; Martin & Pavlovskaya, 2009); with anthropologists specifically grappling with ways in which power affects interactions between humans and their environment (Cortesi, 2018). Geographers suggest that the environment *“refers to the sum total of conditions which surround [hu]man at a given point in space and time”* (Park, 1980: 29). The sub-discipline of health geography suggests the concept of ‘landscape’ should be used to explore health-environment interactions, as it encompasses *“diverse and converging layers of history, social structure, and built environment at particular sites”* (Kearns & Collins, 2010:17). These perspectives are helpful to begin to comprehend interactions between health and the environment.

Niewöhner and Lock (2018) developed ‘situated biologies’ to explain how the environment can influence ‘environment/human entanglements’; emerging from ‘local biologies’ which suggests health is impacted by the material body. Using ‘situated’ instead of ‘local’ implies that it is not just personal biological make-up that impacts the individual but also the environment. Further, the term ‘situated’ acknowledges that not only local factors impact the body, as increasingly apparent in our global world (Niewöhner & Lock, 2018). This builds upon Haraway’s (1991) ‘situating knowledges’, where social, political, historical and economic aspects structure and re-structure the body, in a constant flux allowing bodies to be in a state of ‘becoming’. This ontological caveat is wholly applicable to help to unpack relationships between qanuinnngitsiarutiksait and the environment.

Perhaps more fitting is the Inuktitut concept ‘avatittingnik kamatsiarniq’, shared by Elder Evaluardjuk-Palmer who stressed importance of understanding the environment from an Inuit perspective. Avatittingnik kamatsiarniq roughly means an all-encompassing situation of someone in their surroundings, where one is aware of the habits of the Land and acts towards it with care and respect. Persons are not the most prominent feature in the Land, rather persons are part of an interconnected web of in relation to their surroundings. Elder Evaluardjuk-Palmer noted that other aspects such as policy, government and research are now part of avatittingnik kamatsiarniq, hence their inclusion later. As one is connected to and part of the cosmos, comprehension of historical context is necessary to understand issues of qanuinnngitsiarutiksait. When qanuinnngitsiarutiksait is explored in context of ‘historical environment’, i.e. colonialism, the impact on avatittingnik kamatsiarniq and thus climate change becomes apparent.

Historical Environment

Colonialism refers to imperialist actions based on capitalist expansionist ideals, where the dominant society utilises their power to attain benefits (Karetak & Tester, 2017). Inuit first experienced interactions with Europeans from explorers and whalers in the sixteenth century; in the twentieth century, the Canadian government introduced policies affecting Inuit way of life through sedenterization, forced relocation (some distances similar to Toronto to Miami), implementation of a monetary system, residential schools and tuberculosis control (Kirmayer et al., 2009).

Residential schools impacted children through loss of connection to culture, language and community (Karetak & Tester, 2017); the last school closed in 1996 (Chrétien, 2013). Forced relocation ensured Inuit no longer lived their nomadic lifestyle, with families moved to overcrowded matchbox housing with few facilities; mortgages had to be paid, but monetary jobs were uncommon, thus indoctrination began into a Western way of life and a dependency on social welfare (Karetak & Tester, 2017). The Royal Canadian Mounted Police killed 1,200 sled dogs (used for hunting), officially to stop spreading disease; implicitly to “encourage” Inuit to stay in settlements, deepening their reliance on government’s handouts as then hunting for food became difficult (Watt-Cloutier, 2018). Actions have been attributed to a policy of assimilation for gain of Canadian territorial rights in the high Arctic (Stevenson, 2014; Watt-Cloutier, 2018).

Colonialism set the foundations for capitalism, an ideology based on monetary growth leading to industrialisation and consequently climate change (Connor, 2010; Torrealba, 2021; Whyte, 2017); Davis and Todd (2017) link colonial actions to broken connections between mind, body and Land. The concept of an ‘ecological paradox’ applies, as at first mistreatment of the environment leads to economic growth, but then this growth comes at the cost of health and the environment (Mena et al., 2020). Thus, anthropogenic climate change, rooted in colonial actions, links to impacts to the *qanuinnngitsiarutiksait*. Recent literature found that aspects of wellness, e.g. kinship and culture, were negatively affected by welfare/settler colonialism, and that there were intersections between the effects of colonialism and aspects of coping with climate issues (Mackay, 2018; Whyte, 2017); colonialism has thus had impact on Inuit’s ability to respond to climate change, in part because of anthropogenic climate change and because intergenerational knowledge transmission was interrupted and/or undermined. This process is visually outlined in Figure 3. Anthropological and geographical theory, built upon with the Inuktitut concepts, allows for a holistic understanding of *qanuinnngitsiarutiksait*, moving away from biomedical models of health. Without interdisciplinarity that considers Inuit knowledge, we cannot fully comprehend these concepts or relationships.



Figure 3: Visual demonstration of the link between colonialism, climate change and *qanuinnngitsiarutiksait*

Climatic impacts on *qanuinnngitsiarutiksait*

“It’s all the pieces, like dominoes, all touches each other. I mean everything you do, [our] Inuit way of life and our way of thinking is all intertwined and interconnected [to the environment]. So, something as significant as changes in the temperature, and in snow and rain and that kind of thing, it’s all going to have a ripple effect” (Harper et al., 2015: 6)

The literature suggests that the main impacts of climate change on *qanuinnngitsiarutiksait* are related to mental health, food insecurity, rise of diseases, water insecurity, respiratory illnesses and ice-related accidents. For clarity, these issues will be investigated separately, but their interconnection should be noted. Adaptations to climate change will be discussed, demonstrating resilience,

centring Inuit voices and initiatives, and moving from deficit-orientated research. However, as many issues are relatively new, adaptations do not always exist.

Mental health

Spending less time on the Land is associated with feelings of anxiety, depression, anger and frustration (Cunsolo Willox et al., 2013; Harper et al., 2015; Kipp et al., 2019; Lebel et al., 2022; Middleton et al., 2021). Changes to ice reliability which is becoming thinner or where open water remains for longer periods of time is due to warming temperatures (Ostapchuk et al., 2015), resulting in *“feeling trapped”* (Lebel et al., 2022: 324), or *“like a caged animal”* (Cunsolo Willox et al., 2013: 262). Durkalec and colleagues (2015) found interviewees saying if they could not go onto the Land they would *“have no health”*, *“can’t breathe”*, *“be lost”* and *“their appetite and mind would go”* (p.21). In Nunatsiavut, visits to the health clinic for mental health issues increased after a period of warmer weather, and when temperatures cooled visits were less frequent (Middleton et al., 2021); a health practitioner noting *“when people can’t get out...we see a difference in the counselling part: people are more agitated...because they’re just not getting off on the land”* (Middleton et al., 2020: 6). The literature noted that spending less time on the Land negatively impacted Inuit sense of identity through being unable to do culturally-based activities and engage with traditional knowledge (Clayton, 2020; Richards et al., 2019), impacting feelings of self-worth and productivity (Harper et al., 2015; Lebel et al., 2022; Ostapchuk et al., 2015) – exemplified by a hunter who said:

“if...people can’t be going to the cabin...hunting and...going on the land, then... start to see a community shifting, not knowing what they’re supposed to be doing...not knowing what your self-worth is, not knowing what you should be doing with your time” (Cunsolo Willox et al., 2012: 544)

Studies found that spending less time on the Land is associated with increased ideations of suicide, use of drugs and alcohol (Cunsolo Willox et al., 2013; Lebel et al., 2022; Ostapchuk et al., 2015). In Rigolet, an interviewee stated *“people get bored...turn to drinking and drugging”* (Ostapchuk et al., 2015:17). Community cohesion has been impacted by spending less time on the Land, impacting mental wellness (Cunsolo Willox et al., 2012; Harper et al., 2015; Lebel et al., 2022; Middleton et al., 2020), with an interviewee stating *“cohesiveness is usually a common denominator of outdoor-based activities...it’s sort of somewhat fragmented [because of climate change]. The cohesiveness that now bonds the community could be jeopardized because what else are you bonding on?”* (Harper et al., 2015 :12).

Not spending time outside means more time at home, which some found stressful due to many people in a small space: *“people felt like they were getting in each other’s way more, in a way that they previously hadn’t experienced”* (Cunsolo Willox et al., 2013: 262). Lastly, studies suggested less time on the Land increased attention to historic trauma (Lebel et al., 2022):

“if you are able to find some sense of worth in yourself...able to start unconsciously healing from those wounds...if for some reason you are not able to do something that makes you feel good...then those tragedies...is still there, and then they’re magnified because they come more to the surface because you’re not feeling personal strength” (Cunsolo Willox et al., 2013: 324).

However, when more time is spent on the Land, interviewees expressed feeling *“more relaxed, calm and peaceful, as well as healthier and happier”* (Lebel et al., 2022: 321) with an Inuk³ encapsulating benefits of spending time outside as *“much a part of our life as breathing...so if we don’t get out then...it’s*

like taking part of your arm away...you're not fulfilled...it's just like taking medicine" (Cunsolo Willox et al., 2013: 261).

Access to mental health services in Inuit Nunangat is inconsistent, as Western-trained practitioners generally come to communities for a limited time, or people rely on telehealth, and practitioners may know little of the culture (Lebel et al., 2022). While telehealth services can be useful, e.g. in the COVID-19 pandemic, it poses issues for those without reliable internet (inaccessible to many (ITK, 2021)), or for those who feel more comfortable with in-person conversations. Solutions could include more Inuit training in healthcare programs, located in the North, that are Inuit-centric, or training practitioners extensively in the cultures in which they are working. Practitioners need to be aware of the impacts of the changing Land on mental health, which could be included in their training (Clayton, 2020). Drug and alcohol abuse require a holistic approach, addressing all facets of health (Watt-Cloutier, 2018). Land-based programming, successful in nurturing youth mental health and wellness (Hackett et al., 2016), should continue.

Food insecurity

"I love that [country] food, it's really healthy...it's good for your body and your spirit...you feel good about going out on the Land and being able to do that" (Durkalec et al., 2015: 23)

Traditional 'country' foods benefit Inuit economically, culturally and nutritionally; nourishing mental and spiritual health and community cohesion by hunting, harvesting together or sharing food according to prescribed rules of mutual care (Watt-Cloutier, 2018). However, climatic changes have altered vegetation growth, migration patterns and ocean acidification levels (Harper et al., 2015; Lebel et al., 2022; Torrealba, 2021); melting ice coinciding with seal births, leads to high mortality; caribou preferring areas with more snow in winter and cooler areas in summer; thinner caribou due to less vegetation; caribou drowning when crossing thinner ice; and fewer berries found with less taste (Harper et al., 2015; Panikkar & Lemmond, 2020). Changes exacerbate existing issues of food security; a 2004 survey shows food insecurity rates in the Arctic were eight to ten times higher than the rest of Canada (Schiff & Schembri, 2021), and data from 2008 showing 70% of houses in Nunavut have dealt with food security issues – the highest rate globally for an Indigenous populace in an advanced country (Newell, 2018).

In her book, Watt-Cloutier (2018: 137, 202, 254) relate Inuit's preference for country foods: *"country food connect[s] us to water, land, to the "source" of our life"*, and that not eating them is a *"spiritual loss"*. Hunting teaches valuable skills such as *"patience, boldness, tenacity, focus, courage, sound judgement and wisdom, very transferable to the modern world that has come so quickly"*. Ostapchuk and colleagues (2015: 17) explained the link between food and personhood, through identity, as follows, *"cultural identity is partly what you eat...part of identifying with being Inuit is eating [country foods]"*. Positive health benefits from traditional food are noted through intake of essential vitamins, minerals and antioxidants, with less refined carbohydrates, saturated fat and sodium (Boulanger-Lapointe et al., 2019; Caughey et al., 2022; Rosol et al., 2016). General wellbeing through consumption of traditional foods has meant people *"feel warmer, relaxes the body, causes less stress, makes them feel more full, causes less bloating"* (Newell, 2018:25). Kirmayer and colleagues (1994: 54, 60) found general feelings of discontent when country foods were not eaten, such as *"weakness, lassitude and tiredness...irritability, uncooperativeness...depression"*, while another said, *"Inuit eat mainly meat because it has blood in it and that helps...the person will be in better health...it's visible even on the cheeks, the cheeks were redder... in the past"*.

Consumption of store-bought foods has increased due to the demand of the market economy, where the 9-5 work week, Monday to Friday interferes with harvesting activities which depend on the weather, the loss of skills associated with residential schools and weather changes also impact harvesting and hunting. In less-abundant years, reliance on store-brought foods has been noted (Statham, 2012; Gilbert et al., 2021), purchased foods are twice as expensive or more as in the rest of Canada (Hayward et al., 2020); healthy items are available, but are even more expensive, leading to higher consumption of processed foods (Panikkar & Lemmond, 2020). This dietary shift, along with spending less time on the Land, has been linked to higher non-communicable diseases e.g. diabetes, high blood pressure, obesity and cardiovascular issues (Ahmed et al., 2021; Schiff & Schembri, 2021). An interviewee stated,

“people are eating processed meat and salt and additives...the rate of diabetes has jumped really high...thirty years ago...I do not think there were any diabetics in town. Now there’re lots”, with another stating *“there’s a higher increase of obesity...heart disease...high blood pressure and heart attacks and strokes and I think that it is related to food”* (Cunsolo Willox et al., 2012: 543).

Adaptation has been demonstrated in Arviat through the use of community greenhouses to grow fresh produce, using seaweed as fertilizer, and community freezers to store and share successful hunts (Richards et al., 2019; Schiff & Schembri, 2021). Food sharing networks between community members have been reported in Akulivik (Kishigmai, 2022). In Nunavut this has been noted as being particularly useful for vulnerable populations, such as Elders (Gilbert et al., 2021). In Kugluktuk hunters have revised their courses to reflect changes in migratory patterns, and Elder-youth mentorship initiatives have been implemented to help convey traditional knowledge of hunting practices which can then be adapted to specific climate needs (Rosol et al., 2016; Panikkar & Lemmond, 2020). Further it has been suggested that increased financial support for hunters and harvesters is needed (Gilbert et al., 2021). Overall, investment needs to be put towards resolutions, and strategies to lower costs of food.

Disease

More rain, less snow and warmer temperatures have contributed to spread of disease in the Arctic (Richards et al., 2019). Studies have suggested that a parasite from the Amazon, *Toxoplasma gondii* (causing flu, vision issues, neurological problems, stillbirth, and passed to foetuses in vitro) may be spread either by felids travelling to the Arctic from oocysts discharged in water via north travelling currents, infecting fish and entering the Arctic aquatic food chain, or from migrating animals infected in the Amazon region. Both hypotheses are caused by climate change, as oocysts reach the Arctic from changing currents due to warming temperatures, or migratory animals have changed routes due to climate changes (Reiling & Dixon, 2019). Further, increased Arctic water levels have allowed gastrointestinal pathogens, particularly *H. pylori* and campylobacteriosis, to be transmitted more in recent years causing gastritis, ulcers and gastric cancer (Finlayson-Trick et al., 2021; Hayward et al., 2020). In Cambridge Bay and Kugluktuk these pathogens were found in muskox, making them inedible (Panikkar & Lemmond, 2020). Lack of infrastructure in water testing systems has led to under-reporting of these diseases, as many pathogens are transported in water (Finlayson-Trick et al., 2021). Increase of these diseases is associated with climate change, therefore testing capacities need to increase, practitioners need an up-to-date knowledge of rates, treatment and mitigation measures which are culturally appropriate. Research into modes of

transmission and the impact these pathogens have on these communities needs further investigation.

Respiratory illness

“Association between climate change and the increase in mould in homes is concerning, because usually the frost kills everything...you don't have that now” (Harper et al., 2015: 13)

Historically, mould was not, one contributor saying, *“there's a lot more mould, and you're going to get that too in a milder climate...you're going to have more rain, you're going to have more mould...of course mould has a direct impact on lung health”* (Harper et al., 2015: 13). The literature also reports an increase of respiratory syncytial virus (RSV), attributed to warmer temperatures and more rain (Princeton University, 2019; Schreiber, 2020). Susceptibility towards respiratory illnesses is partly due to socioeconomic factors, such as crowded homes; combined with an increase in mould in houses not being killed by frost, due to warming temperatures, these illnesses are increasing (Harper et al., 2015; Kauppi et al., 2021; Torrealba, 2021). Infants in the Arctic are five times more likely to die from respiratory illnesses than infants elsewhere in Canada, with association to mould exposure suggested to be main issue, but other factors contribute such as: overcrowding in homes, tuberculosis transmission, second hand smoke and increased susceptibility associated with marginal nutrition (Torrealba, 2021).

Access to treatment is limited due to health care system expense, e.g. RSV rates can be reduced with medication which is commonly given in Southern Canada but it is not readily available in the North. Further, infants are often airlifted to receive care due to lacking facilities in the North, which puts stress upon families who are separated from their children, often for long periods of time (Banerji et al., 2020; Kovesi et al., 2007). Care that is routine elsewhere in Canada is not routine in the Arctic; an interviewee from Schreiber's (2020) work reporting that there is:

“huge difference in the way that Indigenous and non-Indigenous people are treated...when you have Inuit babies that have at least much as risk of respiratory syncytial virus...but they're not eligible for the same treatment...it's part of a broader systematic issue that occurs in Canada”
(no pagination)

Overcrowding, lack of equitable medical care and climate-durable housing needs to be addressed, with adequate Inuit-based research and appropriate culturally-based remedies put in place.

Water insecurity

“There are a lot more brooks that dried up. And there are a lot more ponds that are drying. I notice when I go out on the land...to where we used to get water maybe twenty-five years ago...the brooks there are really dried up now” (Goldhar et al., 2014: 76)

Most Canadians have access to drinking water, but not in Inuit Nunangat, as not all communities receive consistent water distribution (Finlayson-Trick et al., 2021; ITK, 2020). Communities receive water via water tanks or aged piped structures from the 1950s, which leak, causing lower pressure and wasted water. Unreliability of clean water means 'boil water advisories' are frequent; trucked water is dependent on deliveries which are often unreliable (ITK, 2020), directly contravening United Nation's human rights resolution on access to clean water (UN, 2023). Local governments prefer trucked water, due to low construction and maintenance costs, but running costs are high (Little, 2022).

As with food insecurity, climatic changes exacerbate existing issues of water insecurity. In Iqaluit in 2019 water pipes froze, previously unknown, due to changes in temperature, and the city spent \$33,000 to thaw pipes which took two weeks, leaving those who relied on this distribution without water (Little, 2022). Those using piped water (often coming from nearby lakes or reservoirs) find provision unreliable due to warming temperatures which melts permafrost under water sources leading to evaporation; in Hopedale in 2015 the school and health clinic closed due to low water reserves (ITK, 2020).

Preference for collecting water from the Land has been expressed, with one person saying they would collect water from brooks during Land-based activities, then take it back to the community, and another saying:

“I don’t drink [tap water] unless it’s an emergency – I would drink a glass then, if I had no water here and the store was closed and I couldn’t get up to the brook. Well, then I’d sip on a little bit. Mostly if I have to use that water, I’ll boil it first” (Goldhar et al., 2014:77)

Literature noted that water availability is expected to vary via season, but in recent summers it has been harder to collect water (Goldhar et al., 2014; Harper et al., 2015; Kipp et al., 2019). One stated:

“I started noticing about five years ago. Out around our cabin where we go in the summertime what used to be ponds are now mud holes” and another saying *“when there is less water it’s closer to the ground so it might be boggy and dirty...if you have ample water supply you’ll get it from a running brook which will be healthier”* (Goldhar et al., 2014: 76).

Due to unreliable and inaccessible water supply, attributed to infrastructure and climatic issues, many rely on buying bottled water, which is extremely expensive; some have filtered water systems but this too is becoming unaffordable. Further, rising gas prices have been identified as an issue for those who prefer to collect water from the Land (Goldhar et al., 2014). Preference for Land water must be recognised as valid, and the drying up of natural sources of water needs to be addressed. Until then, filtered and bottled water must be economically and readily accessible, with investment for better infrastructure.

Ice-related accidents

“My neighbour...had fallen through the ice on a hunting trip...he pulled himself out of the water and, in soaking wet clothes, dug himself into a snowdrift for insulation...he spent nearly two days that way before he was found. Both his legs were already frozen, so they had to be amputated” (Watt-Cloutier, 2018: 186)

Ice is essential for travelling; climate change has led to thinner ice and a new problem of less predictability of which ice is safe, as traditional knowledge was normally sufficient (Wilson et al., 2020). Transmission of traditional knowledge has been negatively impacted by residential schools and of Inuit’s need to engage with a diversity of activities which competes with their time, e.g. school and wage employment. Rates of injury and death while travelling on the Land have increased, and ‘search and rescue’ incidents have increased (Segal et al., 2020; Torrealba, 2021). Loss of ability to travel on the Land impacts mental wellness, food security, and connection to culture as well as safety.

Adaptation to this new reality has been shown by technological initiatives. For example, ‘synthetic aperture radar remote sensing’, combined with traditional knowledge, has been developed to

identify safeness of ice; Cambridge Bay hunters have found this useful and suggest it could be developed into maps and used in schools to teach children how to go out on the Land (Segal et al., 2020). Another initiative, ‘SmartICE’, uses a similar idea and works in collaboration with Inuit to provide this service (SmartICE, 2022). Due to internet and reception issues, experienced frequently in the region, maps should be downloaded before travel and available on lower bandwidths (Segal et al., 2020).

Where do we go from here?⁴

Inuit have been adapting to avatittingnik kamatsiarniq since time immemorial; now with human induced climatic changes, compounded by lasting colonial impacts, the ‘historical environment’ needs to be addressed. Wider issues of government approach, policy legislation and research methodology in this sphere need to be reconsidered as systemic problems here feed into the wider discussion of climate change and qanuinnngitsiarutiksait.

Government

“Government practice for generations was to deny, delay, distract when it came to Indigenous issues” (Wilson-Raybould, 2021:2)

The first Indigenous Minister of Justice and Attorney General, Jody Wilson-Raybould (2021), noted that during her time in cabinet Prime Minister Justin Trudeau’s administration had strong rhetoric with little substance; focus on keeping the party in power; lack of understanding of what decolonisation, reconciliation and a nation-to-nation relationship means in practice; lack of willpower to focus on Indigenous issues; an approach of ‘we know better’ in relation to Indigenous issues; and allowing ‘politics of exclusion to exist’. She sums up this administration as being *“focused on power and partisanship and so little interested in principle...that was more image than substance”*, and points out that this government can make significant changes which are enacted quickly in situations of crisis – as shown through the COVID-19 response; however, the *“government does not see the dire reality that many Indigenous peoples live in as a crisis”* (Wilson-Raybould, 2021: 187, 180). Often, government attention towards the Arctic is on economic development through resource extraction, even though this does not allow for sustainable maintenance of the environment, and, historically, mining projects have failed to implement maintainable economic improvement in Inuit Nunangat (Watt-Cloutier, 2018).

In the context of climate change, the ‘Pan-Canadian Framework on Clean Growth and Climate Change’ (Government of Canada, 2016) and ‘A Healthy Environment and a Healthy Economy’ (Government of Canada, 2020) are reports addressing issues of health and climate change. While Indigenous people, including Inuit, were referred to throughout they were not directly involved and did not provide insight into these recommendations (Deranger, 2021). Trudeau’s visit to Nunavut was two years after he became prime minister, reflecting the lack of support this region receives (Little, 2022); now, focus is on the Arctic in relation to climate change only because melting ice makes the nation more accessible to foreign threats, mirroring an attitude which saw relocation of Inuit in the 1950s – suggesting possible military presence in the Arctic again (Connolly, 2022). Watt-Cloutier (2018) highlights the perpetual misunderstanding in politics of the importance of climate change in the Arctic, exemplified by the Canadian delegation’s refusal to include the Arctic in discussion at Conference of the Parties in 2003, even though she was trying to highlight that the Arctic is the first place to show changes in climate, and that without action the rest of the world

would follow. This attitude, although from a government over 20 years ago, still represents a government genuinely uninterested in a nation-to-nation relationship, and missing the urgency of understanding the climate crisis.

To fully understand problems Inuit face in this context, federal, provincial and territorial governments need to add climate change in the Arctic on their agenda, but before policy is designed and support given, they must ensure that they have an in-depth understanding of IQ, Inuit personhood and implications of the ‘colonised identity’, thus allowing a holistic approach to qanuinnngitsiarutiksait. Impacts of climate change on qanuinnngitsiarutiksait are interconnected and multifaceted, and it could be argued that Inuit are more vulnerable to these impacts due to historical environmental conditions driving underlying socioeconomic inequalities, e.g. high food prices, poor housing, water provision and facilities to keep up with the rise of diseases. Lack of attention to these basic provisions contribute to systemic racism and help to perpetuate settler colonialism. Wilson-Raybould (2021) suggests the administration has taken the stance that the right to self-determination, and therefore self-government, is negotiable; when arguably self-determination is the first step towards decolonisation, reconciliation and a nation-to-nation relationship.

Policy

“At this late date our job is to build movements, ones powerful enough to force the policy changes that give us our only hope of catching up with physics” (Watt-Cloutier, 2018: xv)

To remedy issues of qanuinnngitsiarutiksait in the context of climate change, policies need to be situated in a decolonised framework which centres northern context and experiences, instead of merely copying structures in Southern Canada. Policies should facilitate the revival of Inuit governance through insights from the community and collaboration between the community and those enacting policy. This approach promoted by Inuit Tapiriit Kanatami (ITK, 2019), the representative body for Inuit in Canada, who encourages collaboration between Inuit and those with access to contemporary climate data, allowing a co-ordinated response, using IQ. This approach has begun to be used e.g. SmartIce or the Arviat greenhouse initiative, but more still need to be done. Alfred and Cornthassel (2005: 610) propose that for change to occur, *“shifts in thinking and action”* are required. ‘Shifts’ include, but are not limited to, revisiting the 1984 Canada Health Act to give space for Indigenous treatment modalities; a greater focus on IQ in research, program planning and delivery; and, given the relative small size of the Inuit community, a better use qualitative research findings for policy and program planning.

Although the 1876 Indian Act does not directly apply to Inuit, attitude of the Canadian government toward Inuit is rooted from these thoughts. In regard to treatment of Indigenous people in Canada Wilson-Raybould (2021: 142) describes the existence of this Act as *“segregationist, colonial and racist”* suggesting that it is because of *“ignorance, fear, greed, and lack of will”* that it still exists, and if it continues to exist *“there will always be institutionalised, systematic racism in Canada with respect to Indigenous people”*. The Canada Health Act is the bedrock of health policy, with its objective to *“protect, promote and restore the physical and mental well-being of residents of Canada and to facilitate reasonable access to health services without financial or other barriers”* (Government of Canada, 2022). However, federal commitments to enacting policy assisting in health and wellbeing issues of Inuit is *“limited”* as there are no specific requirements which define *“federal obligations towards Indigenous peoples”* (Lavoie et al., 2021: 385). Those in the Arctic often receive poorer standards and culturally inappropriate healthcare informed by Southern models – as seen from RSV in infants. Ultimately to achieve

equity and maintenance of qanuinnngitsiarutiksait these key pieces of legislation need to be revisited where IQ and Inuit voices inform practice.

Policy appears to be driven by economic quantitative data; however, it can be difficult to quantify issues such as the emotional response to climate change and the importance of Inuit knowledge and perspective (Simon, 2021). Thus, for issues such as this attention needs to focus on qualitative data, such as ethnographic works which allow profound findings to surface, or, adaptation of quantitative measures to be wholly applicable to this context. For example, ethnographic works from Saladin D'Anglure (2018) and Stevenson (2014) give insights on Inuit life, traditions and issues that would not be evident from quantitative data. Comprehension to this three-dimensionality is integral for the enactment of policy and legislation.

Researchers

"Nothing about us, without us" (Morton, 2019: 4)

Inuit have experienced a complicated history with researchers due to lack of consultation and consent, attributed to an approach based on colonial hierarchies (Tuck, 2009). Over the past few years research in Inuit Nunangat has become more of a partnership, e.g. links being made between academics and Inuit with projects tackling priorities in the community (ITK, 2018). Although a participatory approach has been used for research, often this is limited to 'consultation' and findings are not communicated back to the community (Anang et al., 2019). ITK (2018: 6) suggest five areas for productive and just research to take place: *"advance Inuit governance in research; enhance ethical conduct of research; align funding with Inuit research priorities; ensure Inuit access, ownership, and control over data and information; build capacity in Inuit Nunangat research."* Further, they suggest there are issues with funding processes for Inuit-related research, as most funds are given to those in Southern Canada or outside Canada, and that Inuit are limited in the funds they can access due to measures put in place by the federal government.

Methodologically and theoretically a shift is developing in this field, which researchers should take into consideration. For example, the way Liboiron (2021) footnotes and cites Indigenous scholars and the way in which 'Land' is capitalised when it indicated a primary relationship (rather than being used in a general sense) should be considered, as used here, given the importance of acknowledging sources and connection to the Land. Further, a shift is needed in how topics related to Inuit are labelled and discussed, as previous literature tends to focus on what has gone wrong rather than what is going well, and the ways in which self-determination can be attained. Tuck (2009) suggests rather than thinking of Indigenous people as 'broken' or 'damaged', a fuller representation of the community should be taken into account, based on resilience, taking a strengths-based approach, allowing a shift from deficit-oriented research; an approach attempted here, although more thought is needed to adapt to climatic realities.

Conclusion

"Change takes courage, including the courage to break away from the old ways of doing things that are not achieving the needed results" (Wilson-Raybould, 2021:26)

Improving Inuit qanuinnngitsiarutiksait requires holistic self-determination; this comes from acknowledging that colonial legacies still affect Inuit today, that approaches to research, government and policy need to be reconsidered, from a strengths-based approach, with

acknowledgment of existing problems. This can be done by working in collaboration with Inuit; understanding Inuit Qaujimaqatuqangit; recognising issues are interconnected and should not be looked in isolation; taking into consideration the importance of the Land and its associated benefits; taking a cross-disciplinary perspective; not separating the mind and body in approach; acknowledging value of qualitative approaches; and ultimately, commitment from the government to improve. Future research needs to be located in qanuinnngitsiarutiksait, Inuit knowledge, Inuit methodologies and be Inuit-led; lack of attention to these facets can be seen to perpetuate ignorance and continuation of the colonial mindset. Additionally, researchers should aim to think in a cross-disciplinary manner, allowing for nuances and greater insights to come to light.

While finding ways to adapt to current climatic realities through innovative solutions is a noble endeavour, and may provide solutions to other issues too (e.g. the greenhouse initiative helping with rising costs of foods in the Arctic and SmartIce assisting with transgenerational teachings of the Land), the aim should not be to accept a worsening climate, but rather to commit to reversing anthropogenic climatic impacts so that Inuit and other Indigenous groups have the right to their culture and associated avatittingnik kamatsiarniq. Exploration has also demonstrated impacts of climate change are compounded by existing socio-economic disparities. To be clear, this is not to say that Inuit in urban settings cannot achieve qanuinnngitsiarutiksait, but the scope of this study is to investigate climatic impacts in the Arctic; further research should engage with the impact of climate change on urban Inuit and how this affects them.

Overall, the issue is not just about Inuit in the Arctic, it is about recognising that impacts of climate change occur in the Arctic first; that Inuit have been impacted from climate change earlier and to a greater extent than the rest of the globe. They have served as an early warning beacon and our humanity has been lacking. Now, as citizens of an interconnected globe, acting alongside and in the interest of Inuit can redress historical environmental injustices and launch a healthier and more sustainable, equitable future for Inuit as well as co-benefits for societies beyond the Arctic.

Notes

1. Capitalised to follow Liboiron (2021)'s example as this emphasises importance of the Land in this context, not used in quotations to keep the original meaning
2. Non-Inuit, specifically those of European ancestry
3. Singular of Inuit
4. Inspired from Dr Martin Luther King Jr's speech in Atlanta, Georgia 1967

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