

Examining the process, outcomes and impacts of knowledge mobilization (KMb) initiatives from food sovereignty and climate change research in the Inuvialuit Settlement Region, Northwest Territories, Canada

Authors and Affiliations

Maya Morton Ninomiya^{1*}, Kelly Skinner²

1. Health Studies, School of Public Health Sciences, University of Waterloo, Faculty of Health, 4B, m3morton@uwaterloo.ca

2. School of Public Health Sciences, University of Waterloo, Faculty of Health, Undergraduate thesis supervisor

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LAY SUMMARY

Knowledge mobilization (KMb) is the process of bringing information back to the individuals or communities who will be most significantly impacted by it. In the North American Arctic, KMb has already been done in the North American Arctic taking the form of things like storytelling workshops, radio broadcasts, and image-based surveys in schools. Conducting KMb in northern communities is critical, but it comes with a lot of challenges such as lack of funding to support longstanding relationships between researchers and community, data accessibility/ownership concerns, and the ongoing impacts of colonization. Our study focuses on KMb context of the Inuvialuit Settlement Region (ISR), Northwest Territories. By interviewing key rightsholders including researchers, co-developers, and community members, we describe what KMb looks like, identify challenges, and make recommendations on how to improve future KMb in the ISR. Why does this research matter: Food insecurity impacts almost half of the households in the ISR. Climate change is making it harder to access country foods in most Arctic communities. Through this research we aim to improve KMb strategies that increase access to country foods and climate resiliency for those living in the ISR and in Arctic communities across the global north.

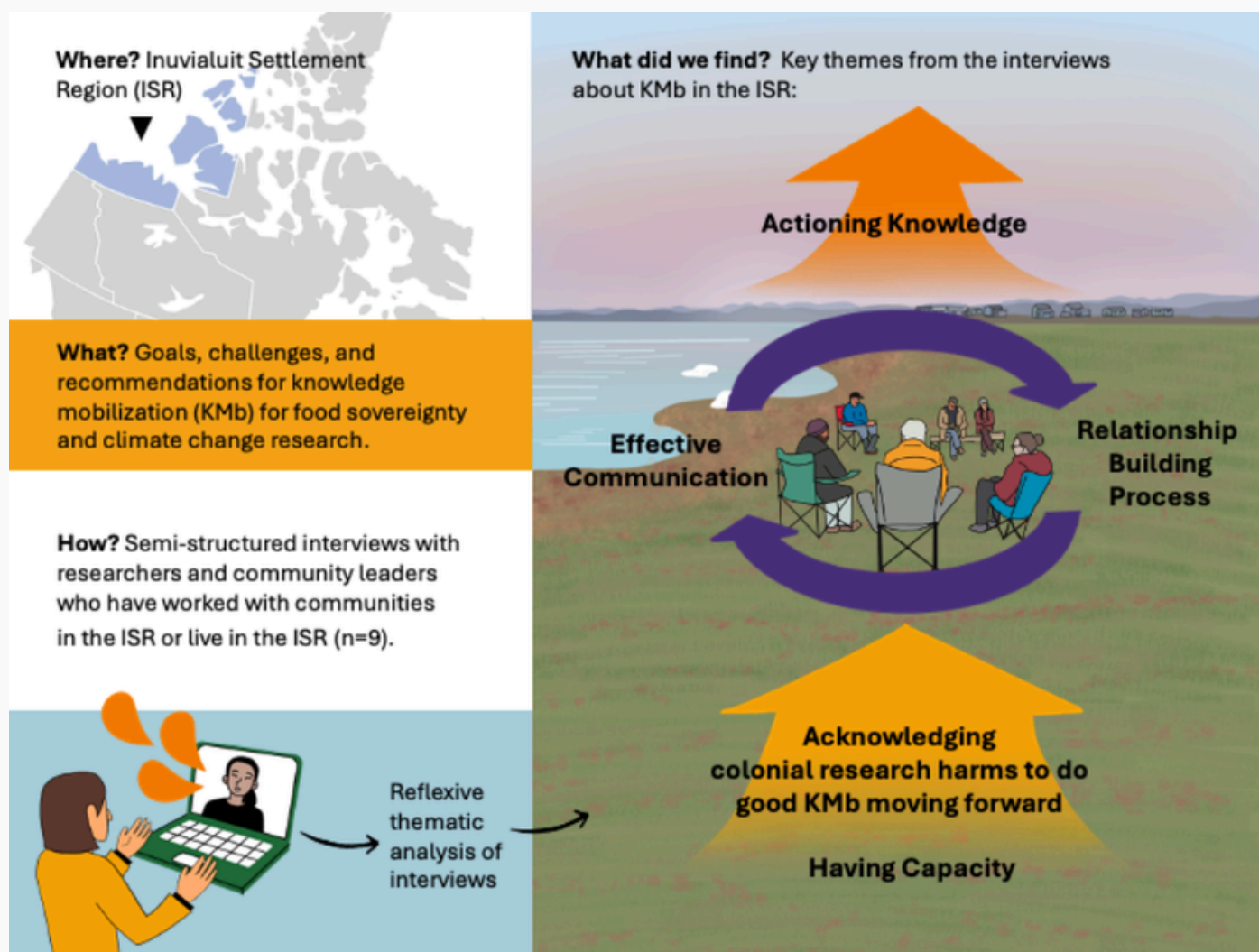
ABSTRACT

Food insecurity impacts almost half of the households in the Inuvialuit Settlement Region (ISR), Northwest Territories. Climate change is making it harder to access country foods in most Arctic communities. Knowledge Mobilization (KMb) refers to the process of translating or exchanging knowledge between researchers and knowledge users. Conducting KMb in northern communities is critical to respond to these issues, but it comes with many challenges such as lack of funding, data accessibility and ownership, and the ongoing impacts of colonization. Semi-structured interviews were conducted with nine key rightsholders including researchers and community leaders to investigate the current goals, challenges and recommendations for KMb in the ISR. The transcripts were analysed for key themes in NVivo using a reflexive thematic analysis approach. This study shows that KMb in the ISR is fundamentally relationship-based and relies on strong communication and collaboration. This study provided a focused insight into what KMb looks like in the ISR, and what tools are being used to achieve effective KMb. Future considerations for KMb in the ISR include: continuing to build community research capacity, uplifting the voices of those with lived experience, being mindful of community and research team capacity, and preemptively engaging policy decision makers.

KEYWORDS

climate change, country foods, food sovereignty, Inuvialuit Settlement Region, knowledge mobilization, Northwest Territories

1. SUMMARY OF RESEARCH STUDY DESIGN AND RESULTS



INTRODUCTION

The Inuvialuit Settlement Region (ISR) is one of the four Inuit homelands in Canada, located in the northern part of the Yukon and Northwest Territories. The ISR is made up of six communities; Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, and Ulukhaktok ranging in population from just over 100 to 3300. 1,2 In the ISR, as of 2022, 78% of the population is Indigenous.³

The ISR is governed by the Inuvialuit Regional Corporation (IRC), established in 1984, which manages the land as per the Inuvialuit Final Agreement.⁴ The IRC is co-managed by Inuvialuit organizations including the Hunter and Trapper Committees (HTCs), the Inuvialuit Game Council (IGC), territorial government agencies within the Yukon and Northwest Territories (NWT), and the Canadian federal government.⁵

Colonial policies involving Inuit relocation, resettlement, and residential schools have had a detrimental effect on Inuit food systems and the transmission of traditional knowledges.^{6,7} Furthermore, climate change is increasingly compromising Inuit food security by impacting the availability, accessibility, and quality of country foods, which forces Inuit communities to rely more heavily on store bought foods.^{8,9} Inuit residing in Inuit Nunangat now experience the highest prevalence of food insecurity among all Indigenous peoples living in developed countries.⁶ Almost half (43%) of the households in the ISR experience food insecurity.¹⁰

Country foods are essential to Inuit food sovereignty, and overall health and wellbeing, including physical, emotional, spiritual, and mental health.^{6,8} Inuit food sovereignty is “the right of all Inuit to define their own hunting, gathering, fishing, land, and water policies; the right to define what is sustainably, socially, economically, and culturally appropriate for the distribution of food and to maintain ecological health; and the right to obtain and maintain practices that ensure access to tools needed to obtain, process, store, and consume country foods.”¹¹ Inuit self-determination and cultural resurgence through the intergenerational sharing and practice of knowledge and skills that sustain relationships to the land, community, and country foods has been emerging through a movement toward Inuit food sovereignty.¹² *Inuit Qaujimaqatuqangit* (IQ) encompasses the Inuit worldview, including Inuit culture, epistemology, and knowledge.⁷ IQ relies on *iqqaqqaukkaringniq* which is described by Tagalik, as “the dynamic process of knowing, applying, experiencing, evaluating and creating new knowledge grounded in a continuum of knowing and continually improving”.⁷

Research on knowledge mobilization (KMb) has occurred in the fields of health, environment, Indigenous studies, going by many names, including: ‘knowledge mobilization’, ‘dissemination’, ‘translation’, ‘exchange’ or ‘knowledge to practice’¹²⁻¹⁴. The concept of KMb has been described as “the reciprocal and complementary flow and uptake of research knowledge between researchers, knowledge brokers and knowledge users—both within and beyond academia—in such a way that may benefit users and create positive impacts...”¹³

Over-researching by colonial, Euro-Western research and exclusion of Indigenous peoples from the research process has disrupted Indigenous health and healing.¹⁴ Dominant methods of knowledge transfer in research have reinforced this pattern of treating researchers as expert knowledge holders and communities as passive users.¹⁵ In this study, we view KMb as a method that focuses on developing, synthesizing and disseminating knowledge in a culturally relevant and useful manner *within* Indigenous communities.^{14,16} KMb is an important tool for food sovereignty and climate change research in the north because, when done well, it can align with the goals of community-led, participatory research, that centers around a collaborative, respectful, interactive approach involving all rightsholders.^{17,18} In the context of the North American Arctic, the key rightsholders can include but are not limited to: Indigenous and non-Indigenous community members, researchers, principal investigators, KMb co-developers, Elders, organization leaders, community leaders, and research licensing agencies.

Current common KMb practices in community-based and -engaged climate change research in the North American Arctic include open houses, plain language summaries, image-based surveys, visual posters, photo books, and storytelling workshops.¹⁹ KMb has also taken the form of more unidirectional communication such as radio stations, posters, physical copies of short data summaries, or newsletters.^{19,20} An important area of opportunity, is using social media (Facebook, YouTube) as a KMb tool, as social media is commonly and intergenerationally used by northern community members.^{19,21}

Indigenous Arctic communities present a unique context and therefore distinct challenges for KMb.¹⁹ It is hypothesized that KMb in the ISR reflects many of these challenges. Previously identified challenges include a limited understanding of local community protocols, insufficient infrastructure and inadequate funding and/or time necessary for developing a strong, reciprocal relationships with community members.¹⁹ Another barrier is that academic institutions and funding agencies often prioritize 'scientific' and 'intellectual' outcomes over meaningful community outcomes.^{19,22} Additional challenges involve determining how to respectfully integrate Indigenous knowledges (IK) into Euro-Western Arctic research that highlight their value without 'othering' or 'orientalizing' them^{19,23} and translating Indigenous concepts and words into English (and vice versa) without losing or distorting the meaning.^{19,24-26} Researchers may also lack the soft skills necessary for effective KMb,¹⁹ and Indigenous KMb effort are rarely evaluated.^{19,27} Other barriers include community research fatigue;¹⁹ limited Internet bandwidth, and inequitable access to research databases;^{28,29} high turnover of government and health care staff at the community, regional, federal level,^{18,19,24} and the ongoing impacts and experiences of colonization in Indigenous northern communities.^{20,30} This study hopes to identify which of these challenges pose the greatest barriers and to synthesize recommendations from rightsholders on how to address them.

Studies have summarized KMb strategies and lessons learned in environmental research globally.^{31,32} A previous study on key principles of KMb in the context of the North American Arctic was published in 2020.¹⁹ The study population included Alaska and populations living within Inuit Nunangat, including the ISR, Nunavut, Nunavik, and Nuniastivut. Their study identified the three key principles of KMb as respect, mutual understanding, and researcher responsibility, supported by the underlying considerations of trust and relationship

building.¹⁹ Presently, there have not been any studies that focus on the specific KMb context of the ISR, hence the need for this study. The goal of this study is to describe what KMb tools are being used in the ISR and summarize the successes, challenges, and opportunities of KMb in the ISR that could be addressed.



METHODS

Positionality and Epistemological Approach

KS is a non-Indigenous settler researcher who has been working with ISR communities for several years on projects related to northern food systems. KS has been engaged in community-based research within the provincial north of Canada and since 2002 and with territories since 2015 and she has established strong relationships with ISR community members and organizations. MMN is a non-Indigenous researcher of mixed Canadian and Japanese descent, who brings experience in KMb in the context of health research.

This study utilizes a constructivist approach³³ that sees knowledge as a social, political, and moral construct and therefore that we, as researchers, come to understand the world through the systems and discourses that we reside within. This analysis will be done using the reflexive thematic analysis approach,³⁴ which focused on researcher positionality and its impacts on the data analysis process.

METHODOLOGY

Participants were recruited using purposive sampling, based on preexisting relationships with KS and suggestions from her colleagues. Researchers, KMb co-developers, and community members who have been involved in previous projects regarding food sovereignty and climate change in the ISR were invited to be participants in a semi-structured interview. The interview guides were adapted based on some of the questions developed by Flynn and Ford.¹⁹ The guides were tailored into three versions for each of the participant categories, (researchers, co-developers, and community members) but primarily only the researcher-specific questions were asked, as the majority of participants were researchers, or had significant research experience. (Refer to the Researcher Interview Guide in Table 1 below). The interview guides were reviewed by KS and CT. Interviews ranged from 30-60 minutes and were either conducted online or over the phone. The interview questions were open-ended, and probes

were used to illicit further information as needed. The questions mainly focused on what methods are currently being used to conduct KMB in the ISR, what KMB challenges have been experienced, and recommendations for future KMB.

Part of the research process included asking participants to share examples of effective KMB products. The purpose of this was to provide the researchers with more community and project context to understand what aspects of KMB are effective to translate the recommendations and learnings in a way that is more reflective of the experience of the participants. These products were reviewed by MMN and were cross referenced throughout the coding process to provide more context to the examples of KMB given by participants.

The qualitative interviews with key informants were conducted by MMN and transcribed by a confidential transcription service. The transcripts were all reviewed once by MMN to familiarize with the data and correct any errors in the transcript. The transcripts were then coded by MMN in NVivo® version ¹⁴ qualitative analysis software using Braun and Clarke's reflexive thematic analysis approach. ³⁵ MMN coded inductively for the first round. The initial codes were then searched for broader level themes. These themes were reviewed by MMN at the level of the coded data extracts and at the level of the entire data set. Through this process, the codes were refined into core themes and sub themes, which were reviewed by KS. The interviews were then coded in a second round based on the framework of core themes and subthemes, which were further refined and reviewed once more by KS.

The final themes and their relationships were summarized into a Figure 2. Figure 2 was based on a synthesis of the core themes and how they interacted with one another based on a thematic map created in the process of refining the codes.

RESULTS

Semi-structured interviews were conducted with key rightsholders (n=9) who have been involved in previous projects regarding food sovereignty and climate change in the ISR, most notably the CIHR-funded team grant project called C4FS: Community Capacity for Climate Change and Food Security Action in the NWT. ³⁶ There were eight interviews, as one was a group interview and included two participants working together on a project. The key rightsholders included seven researchers, one territorial nutritionist, and one community leader who is also a researcher. The participants either worked for, with, or in communities in the ISR. At the time of the interviews, several participants (n=4) lived in communities in the ISR including Inuvik, Paulatuk, or other communities in the NWT. The other participants (n=5) do not live in the ISR but have worked with communities in the ISR for over five years. The participants were primarily non-Indigenous, but we did not ask participants about their identities. The participants specialized in a variety of different areas related to food sovereignty and climate change including: food and water security, community climate change adaptation, nutrition, environmental monitoring, aquatic biology, biomonitoring, community food programming, and school programming.

The participants described the core of KMB in the ISR as the process of relationship building and effective communication, with one supporting the other, and vice versa. Supporting this core of KMB was having community and research team

capacity and an understanding of historical and ongoing harmful research informed by colonial practices. Emerging from these supports and core elements, was the uplifting of community voices and actioning of knowledge to improve programming and policy. These five final themes and their relationships are shown in Figure 2. It became evident through this process that two of the core themes were strongly co-related and the other core themes were an essential foundation for the final core theme.

Effective Communication

Several participants described the open, transparent, reciprocal, ongoing dialogue as integral to effective KMB. There were several key rightsholders with whom effective communication is fundamental for KMB. This included communication within and between communities, and within and between research teams. Key rightsholder communication also included regional governing bodies such as the IRC, HTCs, policy decision makers, and the federal government.

Participants described frequent feedback and engagement from the community as a sign of doing KMB well. Effective KMB is conducted in a space of open communication and is founded upon strong relationships and trust between the community and researchers built prior to the start of the research project. Among participants, constant iterative feedback from community and community partners was built into the research process itself as a general norm or expectation.

“From my experience just working closely with the community and working with community partners all throughout the research, it's just embedded in the process. So... in that way... there weren't really any challenges or big changes that needed to be made, just because we were working closely throughout the process from start to finish.”
(Participant 3)

Academic deliverables such as peer-reviewed publications were one aspect of how information from co-designed research projects was translated to community. Drawbacks to communicating community research findings through peer-review publications were that they are not engaging and it takes a long time for the results to be returned and acted upon. Researchers are moving away from academic deliverables towards more creative, engaging, succinct KMB outputs such as one-page infographics, videos, podcasts, graphic illustrations, presentations to community, plain language summaries, and accessible academic writing for general audiences. For example, one participant shared a video they made that was shared at a community night that included drone footage of belugas and documented the research process. Another participant shared a diagram that visually describes the Mukluk Logical Model behind a cooking circle program in the ISR. ³⁷

Participants emphasized the importance of culturally appropriate deliverables that have been co-produced and are meaningful and useful to the community. Participants expressed their desire to not only make knowledge accessible, but to use research deliverables to continue foregrounding traditional knowledges and Inuvialuktun terminology and culture. Several participants described how their most valuable and meaningful KMB outputs were solely for the benefit of the community with no academic components whatsoever.

“Or some things that I’ve discussed with other academics or researchers, which is how to foreground Inuvialuktun terminology in various products... like our maps should be probably in Inuvialuktun, which is the major language spoken in ISR. And it’s a conversation that we want to have with our partners in terms of , ‘Do you prefer those terms? Do you prefer the English terms? Which one should come first? How do we bring in more of the ontological elements of Inuvialuit culture into this work and how do we represent that in our knowledge products.’” (Participant 4)

Several participants talked about the importance of having strong communication within the research team and across research teams to avoid duplication of work and ensure all the work is getting done.

Some barriers to effective communication were the high rates of turnover in regional and federal government positions or in elected community boards. Several participants discussed the gap in communication between the community and policy decision makers in the NWT and federal government. Raw data has been collected by the community on food insecurity and food costing in the ISR, but the federal government has not been using this information to make changes to policy that could improve food security in the ISR. This is a barrier that needs to be addressed in order to properly action knowledge.

“I think the other issue is that there’s high turnover in a lot of government positions, especially in the north. And by the time you’ve built to this great... positive flow of information between communities and researchers and decision-makers and knowledge users... often the people in those government positions... they’ve transitioned to a different department or region or role. And that is difficult, very, very difficult. And I see that happen at all levels from federal to regional governance” (Participant 9)

Relationship Building Process

Several participants discussed the goal of KMB as the process of relationship building. While KMB has previously been described as a product or a tool, the participants in this study described it more as a process of having a discussion in which everyone feels comfortable providing honest feedback and through this process, the most pertinent questions and issues will emerge. This discussion needs to occur with all of the key rightsholders in the same room, most importantly, community members and leaders with lived experience of fighting for food security.

“...I think effective knowledge mobilization is a process. It is that dialogue and that bidirectional flow of information from people that have lived experience of the issues towards researchers, towards policymakers and I think when that information is flowing freely and the questions can emerge organically from that process. Yes, I wouldn’t see it as a final endpoint. I think it’s more so when there’s those relationships of trust that are established and that together we can work to generate information that serves as the betterment of the living conditions in the communities.” (Participant 9)

The participants described how the community is living reality of what it means to adapt to climate change and to food insecurity. Therefore, members of the community have traditional knowledge that will determine the highest quality questions, from which the most valuable solutions will come from. Hence, it is through relationship building and dialogue between community members, leaders, researchers, and policy makers that the most relevant research questions will emerge that can then be addressed.

“For knowledge mobilization for climate change and food security is just proper raw data collecting, because you can’t get any better quality answers out of what you’re looking for... I believe we build a really good foundation for any group to work off of, because we know the problems, we are trying to find solutions. And this is all data collected from the public. And they’re living reality... they adapt, then they’re very resilient people. But this is – and this is where we get the traditional knowledge that comes in to help with data knowledge mobilization.” (Participant 2)

Recognizing Colonial and Research Harms to do Good KMB Moving Forward

Participants acknowledged the harms that Western research has had on Indigenous communities, and some provided specific examples of how this has happened in the ISR specifically.

“Historically Western science and “research” has been often single disciplinary, Western science-oriented, hegemonic, not involving other ways of knowing. And really looking at knowledge production as a process of the researcher going somewhere and taking that information and taking it back for their own purposes.” (Participant 4)

Several participants described themselves as outsiders to community who do not have a full understanding of cultural norms and procedures. Some participants acknowledged how research is still benefitting them as Western researchers to this day, and to be mindful that communities in the ISR need to benefit at least equally, if not more, from the research being done in the ISR.

“...we’re really in a privileged position and I think we have to constantly remind ourselves of that and recognize that we’re outsiders coming in and we don’t fully, can’t fully understand the context, the world view, all of the different pieces of the puzzle I guess. Or potential triggers that in our research might be triggering somebody because of a past experience or ... or for some other reason... we have to remember our role and... recognize when we need to pull out or pull back or get out of the way.” (Participant 8)

Several participants described the goal of KMB as privileging the voices of people with lived experience. Participants emphasized that initial engagement, co-production, and participatory research is essential because it ensures that community questions and issues are being answered and addressed. Effective communication and relationship building are essential to actively ensuring that future harms to

communities in the ISR are not committed in the process of doing research, and that KMb done by and with communities in the ISR can continue to be done in a good way.

“When you listen to the people and use their knowledge, then you get a better accurate way of finding solutions to what they need, instead of doing research, and then...I don’t know if you call it manifesting an outcome. But if you just say, “OK, I’m going to do it this way no matter what the people say, and this is my solution to your problem,” it’s not going to work. You need to use the information from the public to get something that will work for them.” (Participant 2)

Actioning Knowledge

Participants discussed several ways in which traditional knowledge from the community on climate change and food sovereignty has and should continue to be mobilized. First and foremost, the knowledge generated through co-production and participatory research needs to be given back to the community. Several participants discussed the importance of using the knowledge to improve programming and services in the community, by combining research knowledge with traditional knowledge. For example, finding ways to utilize country foods more in programming. Effective KMb came back to strong communication between partners and community that ensures knowledge is getting fully implemented as partners with the appropriate resources and tools come together.

Several participants emphasized the importance of using KMb to inform territorial and federal government policy. Participants discussed how data collected by community for community is very policy relevant and that there are areas in which relatively simple changes to government policy could make a big difference in food security in the ISR. Proactively involving policy decision makers into the conversation earlier and throughout the research process may be a way of actioning knowledge more effectively in the future. Additionally, continuing to provide evidence of the cost of not addressing these issues that are remediable by policy changes is also a future area of focus.

Having Capacity

There are many community priorities that come before research. Recognizing the pre-existing commitments of the community members, researchers, and partners is important to maintaining a sustainable KMb process. Participants described how when unforeseen circumstances have arisen, being flexible and adaptable was a critical skill for doing proper KMb. Communicating within the team and recognizing when people are at their capacity with projects is very important. Participants again recognized the need for constant, transparent, ongoing communication to avoid fatiguing local partners.

Participants frequently discussed how conducting quality KMb with a good process and quality deliverables is very costly and time consuming. Co-presenting and traveling to all communities for dissemination, while essential, takes time and requires significant funding. Building time into the research ethics and funding process is critical for successful KMb. For masters and PhD students, time and resources was a significant challenge as academic timelines do not always align with community timelines. Scoping the project beforehand is critical to determine what a realistic and

sustainable project would be. For researchers in longer term positions, developing strong project management skills and effectively mobilizing a team were very important to conducting quality KMb.

“...there is a significant amount of work that’s expected of you in terms of – especially working in a remote northern and Indigenous community and so finding the balance of getting the outputs that you need for your project, to get your degree. And then also being able to give that information back in a way that’s a nice package with all the information is sometimes a challenge when you know you’re only expected to do one thing... I think a lot more work goes into good research that happens in the north.” (Participant 1)

Finally, having a transdisciplinary team with a diverse skill set that includes those who have a strong relationship with community and experience with co-production was another factor that enabled strong KMb.

Overall, there was a sense that the KMb process and deliverables in the ISR have changed over time. Importantly community outputs are now becoming equally, if not more valued, than academic outputs. The deliverables themselves have changed from more traditional project reports and peer-reviewed publications to more easily digestible, creative, and engaging outputs. More time and funding is being built into the research and ethics process to do KMb. Policy is starting to reflect the data being collected, analyzed, and disseminated by community. Despite these positive changes, there is a desire to continue building up KMb. There was a general consensus that KMb is moving in a good direction. However, it is important to remember that this is coming from researchers and community leaders that have been working in the ISR, but many of whom are not living in the ISR and do not have lived experience of food insecurity.

DISCUSSION

This study aimed to describe KMb goals, tools, successes, challenges, and recommendations in the ISR according to key rightsholders. The key goals of KMb in the ISR include building relationship and trust between community and researchers, addressing community questions, and improving community food sovereignty through programming and policy that incorporates country foods and knowledges. Building strong relationships and maintaining open communication were both foundational goals and essential tools for KMb. Strong relationships, engagement, and feedback from the community was a described not as a success, but rather as sign of doing effective KMb; an indication that the chosen research questions were relevant to the community. Challenges to KMb included academic deliverables and timelines not aligning with community deliverables and timelines that limited the ability of time and funding available for meaningful collaboration. Challenges or considerations for Western researchers also included being outsiders lacking complete understanding of community protocol and or social and cultural norms and historical and ongoing Western research practices that have harmed communities. Recommendations for future KMb included involving policymakers earlier, using social media more effectively, communicating intentionally about research team capacity, and considering how to incorporate more Inuvialuktun language and culture into KMb. Building strong relationships was a key finding and consistent with the literature. The study by Flynn and Ford (2020) on KMb

in the Arctic, also identified strong relationships as key to effective KMb. ¹⁹ This finding aligns strongly with previous international systematic reviews on the principles of KMb and health evaluation in Indigenous contexts that identify building collaborative relationships and trust between researchers and community as simultaneously a goal, tool, challenge, and recommendation, integral to effective KMb. ^{18,27,38,39}

One of the most significant challenges identified in our study was managing the time and funding required to develop strong relationships with community members. Graduate students found it challenging to scope projects given limited time to create meaningful community deliverables. Participants who were in project-lead roles, were challenged by effective time management, and team management, skills they had never officially been trained for in academia, but that were an essential part of their KMb work.

Being mindful of community capacity was discussed but community research fatigue did not seem to be an immediate concern in the ISR. Participants in our study discussed how a uniquely large number of research teams do work across the six communities of the ISR. While the ISR is relatively small in terms of population, a cohesive team may also be what allows researchers and communities to communicate more effectively about their collective capacities and adjust accordingly.

High turnover of government and community board positions at the community, regional, and federal levels was also discussed as a significant challenge in KMb in the ISR. Participants described working closely with local community partners on language and communication throughout the research process which meant that mistranslation was not as much seen as a challenge but as a reality. Navigating whether, when, and how to integrate IK into Euro-Western Arctic research in a way that highlights the value of IK, but that does not 'other' or 'orientalize' IK seemed to also be something that participants were actively wrestling with and were incorporating part of the continuous dialogue process. Limited internet bandwidth in Arctic communities, ¹⁹ and inequity in research database access due to limited computer literacy or availability in communities ^{28,29} were not discussed by our study participants. This may be because access to internet in the ISR has been improving with many community members and researchers now having access to Starlink which provides internet to remote communities using satellite connection.

Our study combined some of the concepts around colonial research harms and the implications for KMb that were discussed separately in the Flynn and Ford study. ¹⁹ For example, in the Flynn and Ford study, the 'Including different knowledge systems' section discussed holistic methods of inclusive knowing and continuous consultation with community participants that centred community priorities and challenged the ongoing dichotomies in Western scientific research that place Western knowledge above Indigenous ways of knowing and doing. ¹⁹ The 'Reconcile research' section discussed power imbalances in academic research as a result of the colonial history, and that non-Indigenous researchers need to recognize when to take a step back. ¹⁹ The 'Acknowledging the value of KMb' section discussed the challenge of academic research institutions and funding agencies in the arctic research context not placing enough value in KMb or broader community impact, but rather the 'scientific' or 'intellectual merit'. ¹⁹

Similar topics arose within this study, however, they were

more often contextualized back to their colonial Euro-Western science-oriented origins and were all seen as different manifestations of the same issue. Several participants identified how historical and ongoing impacts of colonial research practices led to them benefitting from research as non-Indigenous researchers living outside the community. Participants then acknowledged the challenge of academic institutions not placing equal value in meaningful community products and academic outputs, which occurs as a result of contemporary research being dominated by Euro-Western values, and evidence hierarchies. ⁴⁰ Participants then not only recognized these colonial harms, but their resulting obligation as researchers to advocate for the use of KMb to uplift the voices of the community so that the issues impacting them can be effectively addressed. Our participants also recognized that when and where appropriate, research was able to provide space and opportunity for community to share traditional knowledges, culture, and languages within, across and outside of communities. Participants seem to feel that KMb was moving in a good way, but wanted to continue in a reflective way, constantly linking previous research harms to their ongoing impact. This included drawing attention to the role KMb has not only to 'reconcile' or restore relationships damaged by research, but to uplift and give back to community by continuing to highlight the value of community outcomes and deliverables that strengthen community and go much further and deeper than 'scientific' or 'intellectual' merit.

LIMITATIONS

The first author, MMN, is a settler of mixed Canadian Japanese heritage, who does not live in the ISR and therefore does not have a full understanding and experiences of Inuit knowledge and culture. This may have limited MMN's ability to fully understand the context of KMb challenges in the ISR. This project focused on researchers and community leaders who have been working with communities and Inuvialuit in the ISR for many years, and experience with KMb products from their research-community collaborations, but do not all have lived experience with food insecurity and northern climate impacts. Future studies on KMb in the ISR should include more community members, and co-developers of KMb that have lived experience of fighting for food sovereignty to determine how the goals, challenges, successes, and recommendations for KMb differ from the perspective of primarily non-Indigenous researchers.

RECOMMENDATIONS FOR FUTURE KMB

Our participants generally did not state recommendations for how to do KMb 'better' in the future. There was more of a collective vision of the good direction the participants felt KMb was going and what aspects of their work were helping to create this. This collective vision including thinking more about collective team and community capacity, involving policy decision makers earlier in the research process, utilizing more creative, engaging forms of KMb such as social media, podcasts, and video, advocating for research to be evaluated and assessed based on its own merits, and more formal evaluation of KMb.

As researchers doing food sovereignty work in the ISR across six different communities at several different academic institutions, being a coordinated, cohesive team that supports each other and gives each other energy to do this work was an important part of the collective vision for future KMb. Participants also wanted to continue the practice of inclusive, transparent approaches to research that are intentional about involving policy and practice decision makers in regular

status-update meetings about the issues community members are evoking.

Participants recognized that academic research funders, reviewers, and evaluators are starting to place more value in KMb and community outputs, but that there is still work to be done. For example, the Declaration on Research Assessment (DORA) for scientific research acknowledges the problems with basing funding and hiring practices on Journal Impact Factors, and other journal metrics, assessing research on its own merits rather than on the journal, and exploring new indicators of impact.⁴¹ Our participants saw part of their goal of effective KMb to be advocating for changes in research evaluation and funding priorities in the future.

One recommendation from the Flynn and Ford literature review component was the importance of formal KMb evaluation that is currently not common in Arctic research¹⁹. The same was true for this study. Our participants seemed to feel that the constant, iterative feedback process was adequate, and that formal evaluation would be beneficial, but was not necessarily feasible, given the barriers. One participant in this study stated formal evaluation was beyond the capacity of an undergraduate thesis like this one, having the potential to be a whole other study in and of itself. If feedback and continued engagement is done throughout the entire research process then perhaps formal evaluation is not as necessary. However, there are a few examples of community based evaluation of KMb in northern Indigenous communities,⁴² and urban Indigenous communities in Ontario,⁴³ and in Aboriginal and Torres Strait Islander primary health care, in so-called Australia⁴⁴ that allowed for significant learnings for future KMb processes. Evaluation of the KMb process by community-defined measures of success, may be an important tool of future use for improving future KMb.^{16,19}

CONCLUSION

Our study identified five core themes on effective KMb in food sovereignty and climate change-related research in the ISR: Effective Communication, Relationship Building Process, Recognizing Colonial and Research Harms to do Good KMb Moving Forward, Actioning Knowledge, and Having Capacity. These core themes aligned closely with previous research on KMb for climate related research in the Canadian and American Arctic more broadly.

This study showed that KMb in the ISR is fundamentally relationship-based and relies on strong communication and collaboration. Additionally, this study provided a focused insight into what KMb looks like in the ISR, and what tools are being used to achieve effective KMb. The findings are encouraging and suggest that KMb practices are shifting in a good direction as KMb is continuing to receive more recognition from communities, funders, regional organizations, and policy decision makers. Future research on KMb in the ISR should focus on community members' perspectives of the goals and challenges of KMb. Continuing to build community research capacity, actively uplifting the voices of those with lived experience, being mindful of community and research team capacity, and engaging policy decision makers earlier in the research process are all important considerations for future KMb in the ISR.

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Research Questions	Interview Questions
RQ 1: What are the KMb goals and what tools are being used to achieve those goals?	Q1: What methods/tools/products have you used to do KMb in community research in the ISR? (i.e., tools used)¹ • How do you determine what KMb methods/tools to use? • How do you determine who should be involved in the KMb? • What types of KMb are being requested by partners/communities? Q2: Would you be willing to share a physical example of a KMb method/tool/product that you have used, for context? (Can be either effective KMb, or one that needs improvement) Q3: Please describe your role in the most recent KMb initiatives/projects that you have been a part of?² • Would you describe your role as developing, designing, facilitating, leading, co-developing KMb, or as something else? Q4: In your opinion, and based on your experience, what do you see as the goals of effective KMb? • Why? • Could you provide an example of a KMb method/tool/project, or aspect of a project that you felt was effective/successful?
RQ 2: What are the successes and challenges of the KMb strategies?	• What aspects of the KMb method/tool/project made you consider them to be successful? Why? Q5: What are some challenges you have experienced when developing KMb initiatives/projects? • What are the most significant or pressing challenges to KMb? • What challenges to KMb do you personally think you have the capacity to change/respond to and how would you respond? • What are other challenges that you feel you don't have the capacity to change? Why?
RQ 3: What are researchers, co-developers, and community members envisioning for future KMb strategies?	Q6: Do you ask for feedback or evaluate your KMb? • Why or why not? • If yes, what do you want to know from participants, what kinds of questions did you ask? • If yes, what kinds of feedback did you receive? • If yes, did you follow-up on feedback? • If yes, did you encounter any challenges in responding to the feedback? • If no, why don't you ask for feedback? Q7: Are there any recommendations you have for developing future KMb in the ISR? • Are there any tools for KMb that you think could be used more? • Are there elements of inspirational KMb you have seen that you would like to try implementing? Q8: Is there anything else you would like to add that we have not yet discussed? Q9: If there is anyone from the community that you can think of who has experience participating in KMb in food sovereignty and climate change-related research in the ISR, would you be willing to forward the initial study information email to them to see if they would be interested in participating?³