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Diverse methodological approaches to a Circumpolar multi-site case study which upholds and responds to local and Indigenous community research processes in the Arctic

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ABSTRACT

This paper outlines the methodological approaches to a multi-site Circumpolar case study exploring the impacts of COVID-19 on Indigenous and remote communities in 7 of 8 Arctic countries. Researchers involved with the project implemented a three-phase multi-site case study to assess the positive and negative societal outcomes associated with the COVID-19 pandemic in Arctic communities from 2020 to 2023. The goal of the multi-site case study was to identify community-driven models and evidence-based promising practices and recommendations that can help inform cohesive and coordinated public health responses and protocols related to future public health emergencies in the Arctic. Research sites included a minimum of 1 one community each from Canada (Nunavut,) United States of America (Alaska), Greenland, Iceland, Norway, Sweden, Finland. The approaches used for our multi-site case study provide a comprehensive, evidence-based account of the complex health challenges facing Arctic communities, offering insights into the effectiveness of interventions, while also privileging Indigenous local knowledge and voices. The mixed method multi-site case study approach enriched the understanding of unique regional health disparities and strengths during the pandemic. These methodological approaches serve as a valuable resource for policymakers, researchers, and healthcare professionals, informing future strategies and interventions.

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Introduction

The Circumpolar region encompasses the Arctic territories surrounding the North Pole, characterised by remarkable heterogeneity. Diverse indigenous cultures, languages, and socio-economic conditions thrive within this vast expanse, including regions of North America, Europe, and Asia. Indigenous communities, such as the Inuit, Saami, and various Siberian groups, exhibit unique traditions, languages, and adaptive strategies to the harsh environment. Environmental conditions vary widely, from icy tundra to boreal forests and coastal regions, influencing livelihoods and biodiversity. Socioeconomic factors, including access to healthcare,

education, and economic opportunities, also exhibit significant disparities. Acknowledging this heterogeneity is crucial for crafting inclusive policies and sustainable development in this ecologically vital region.

Circumpolar contexts share some interesting commonalities. To date, and with the exception of our work [1–7], a paucity of Circumpolar comparative studies have emerged. For the past few years, a group of Fulbright Arctic Initiative fellows have been collaborating to foreground the experience and concerns of Arctic residents in the health literature.

This paper outlines the methodological approaches to a multi-site Circumpolar case study exploring the

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impacts of COVID-19 on Indigenous and remote communities in seven of eight Arctic countries. Researchers involved with the project implemented a multi-site case study to assess the positive and negative societal outcomes associated with the COVID-19 pandemic in Arctic communities from 2020 to 2023. The goal of the overall project was to identify community-driven models and evidence-based promising practices and recommendations that can help inform cohesive and coordinated public health responses and protocols related to future public health emergencies in the Arctic. Research sites included a minimum of one community each from Nunavut, Alaska, Greenland, Iceland, Norway, Sweden and Finland. Russia was initially identified as a partner, but later withdrew.

The project was methodologically both interesting and challenging because it aimed to address the following research questions:

- (1) In what ways were public health measures implemented to address the COVID –19 pandemic the same or different in Arctic communities?
- (2) What were Arctic community experiences of public health measures during the COVID-19 pandemic?
- (3) How has Indigenous knowledge and local knowledge been integrated with recommended/mandated public health measures to address the COVID-19 pandemic?
- (4) What coping strategies did Arctic communities engage in to adapt to the COVID-19 pandemic?
- (5) What can we learn from these community case studies to inform policy and programme implementation now and in the future?

The goal of this article is to provide insight into our diverse methodological approaches, perspectives on validity and reliability, and discussion on developing methods in a way that is responsive to the values and research frameworks that are driven by Arctic communities.

Background

In the Circumpolar region, communities have, and continue, to rise to the challenge of implementing the complex public health measures aimed at limiting the spread of COVID-19 [8]. The different nation states in which Arctic peoples live implemented different policies regarding the pandemic, and a variety of public health measures were introduced to influence/impact community level behaviours including, but are not

limited to social distancing, travel restrictions, self-isolation, quarantines, mask wearing and testing.

At times, these measures are imposed by nation-state onto communities, including Indigenous communities, with little input from those communities. While well intended, community context might require adaptation of the measures, which may or may not be supported by state level decision-makers.

Furthermore, Indigenous organisations, governments, communities and leadership required reliable information to prepare, track, and communicate and plan for the impacts of COVID-19 (and future outbreaks) in ways that reflect their unique experiences in Arctic communities [8–10].

To fully understand the implications of COVID-19 in the Arctic, diverse data sources were needed that included Indigenous knowledge and local knowledge with western scientific methods. The goal of this paper is to highlight the mixed methodological approaches to our multi-site international case study, which were implemented within a locally-focused community-driven framework, responsive to the needs of the communities in each country. Specifically, we present our study design followed by the description and use of each methodological approach that contributed to our multi-site case study.

Study design

Case study

A case study is an in-depth, detailed examination of a specific subject, such as an individual, group, event, or phenomenon [11]. It involves comprehensive research, often incorporating various data sources like interviews, observations, and documents. The aim is to gain a deep understanding of the subject's unique characteristics, context, and dynamics. Case studies are commonly used in fields like psychology, sociology, business, and medicine to explore complex real-world situations. They provide valuable insights for theory development, problem-solving, and decision-making by offering a rich, context-specific perspective on the subject under investigation.

For the present study, the lead researchers followed a participatory community-based approach, with each case was defined by the lead researchers of that country, and primarily involved a specific geography or region, for example, the Westfjords of Iceland or the Territory of Nunavut in Canada [12–14]. Participatory community-based research is a collaborative approach in which community members actively engage in all stages of research to address local issues and create

meaningful, context-specific solutions. Each lead researcher had a connection or existing and trusting relationship with the communities that were invited to participate as cases.

The data sources included media reports, public documents, epidemiological data review, surveys, and 202 interviews with community members, decision-makers, and health service providers. Because Circumpolar Indigenous populations experience health inequities relative to other national groups, all case studies with the exception of Iceland, focused on the specific experiences of Indigenous communities in relation to the pandemic. Separate case studies have been published elsewhere [4,15–18], or are in the process of being published [7,19].

With an added focus on implementation science [20] and the need for clear evidence-based policy direction, a mixed methods multi-site case study design was selected by the research team [21]. This allowed for flexibility in relation to responding to community needs during the global COVID-19 pandemic and permitted research leads to work responsively with communities according to their own frameworks and research approaches. The methods that were harnessed for this project are presented in more detail, below.

Ethics approvals were sought from and granted by the home institutions of the lead researchers in each of the seven participating Arctic countries, following the ethics protocols of their communities and regions. Informed consent was obtained both in an oral format and in writing [22].

Data collection

Document review

A document review in research involves systematically examining and analysing existing written materials relevant to a specific research question or topic. This process includes gathering, organising, and critically evaluating documents such as reports, articles, policies, and archival records [23]. Researchers aim to extract pertinent information, identify patterns, and draw conclusions to support their study. Document reviews are valuable for synthesising existing knowledge, providing context, and informing the methodology of a research project. They offer a cost-effective means of accessing a wide range of information, complementing other data collection methods like interviews and surveys.

The analytic procedure entails finding, selecting, appraising (making sense of), and synthesising data contained in documents. Document analysis yields data (excerpts, quotations, or entire passages) that are then

organised into major themes, categories, and case examples specifically through content analysis [23]. In the present study, researchers examined national and regional documents pertaining to the announcement and implementation of public health measures; communications releases pertaining to COVID-19 public announcements; case counts and recoveries; policy documents and briefing notes about COVID-19 management in pertinent regions and/or communities; and other documents.

Online survey

An online survey is a data collection method that uses digital platforms to administer questionnaires or forms to a targeted group of respondents over the internet. It is a popular tool for gathering information from a large and diverse audience and increasingly used in qualitative research – especially during the pandemic [24]. Participants can complete the survey using computers, smartphones, or other internet-connected devices. Online surveys can be designed using various survey software or platforms, allowing researchers to create structured questions, multiple-choice options, open-ended responses, and more. Surveys can be implemented in any language. The data collected from online surveys can be analysed quantitatively and qualitatively to derive insights and draw conclusions for research or organisational purposes. They offer convenience, efficiency, and the ability to reach geographically dispersed populations. While it is a useful tool, there are also so challenges with implementation in remote communities due to internet infrastructure and connectivity challenges [25].

In the present study, online survey tools were used to gather a diversity of perspectives from a larger audience spread over a vast geography, however due to connectivity issues, response rates were low. This was particularly the case for Nunavut. Data were examined and triangulated in relation to findings from other methodologies to create a more in-depth understanding of the experiences of individuals and families during COVID-19.

Narrative collection

Interviews in research are structured conversations between a researcher and a participant or informant, aimed at gathering specific information or narratives [26]. Narrative collection interviews focus on eliciting detailed, firsthand accounts of experiences, perspectives, or events from the participant. These interviews often employ open-ended questions to encourage participants to share their stories in their own words. Researchers may use techniques like probing or

follow-up questions to delve deeper into the narrative. The data collected from narrative interviews provide rich, context-specific insights into individuals' experiences and viewpoints, making them valuable for qualitative research, case studies, and understanding complex social phenomena. Narrative collection also is more aligned with the research methods of Indigenous peoples which can be less structured and more conversational, based on the concept of developing a relational and safe space for discussing difficult topics. For this reason, narrative collection formed the basis of data collection for all of the case studies in this study.

In the present study, 202 narrative collection interviews were conducted with community members, health service workers, essential workers, and decision-makers in 7 Arctic countries. The interview guides were developed in English and provided a base structure, recognising that some variability would exist after translation into the relevant local languages (Icelandic, Sámi dialects, Inuktitut, Kalaallisut, Norwegian, Danish, etc.) and accounting for local terminologies. Narratives were transcribed and anonymised. Transcriptions were verified by listening to original recordings.

Media scoping review

A scoping review is a type of research synthesis that aims to map out and systematically evaluate the existing literature on a specific topic, often one that is broad or has not been extensively studied before [27]. Unlike systematic reviews, which focus on answering a specific research question, scoping reviews aim to provide an overview of the available evidence, identify gaps in knowledge, and highlight areas for further research.

A media scoping review involves systematically examining a broad range of media sources, such as news articles, social media posts, and videos, to map out the extent, nature, and key themes of a particular topic. It aims to identify gaps in existing knowledge, assess the scope of available information, and provide a comprehensive overview of media coverage. Unlike traditional scoping reviews which focus on academic literature, media scoping reviews prioritise non-academic sources to capture public discourse and perspectives on a subject, making them valuable for understanding societal attitudes and trends related to specific issues.

In the example of the media scoping review conducted in the Swedish case study, material published in the period NaN Invalid Date to NaN Invalid Date, written in Swedish or Norwegian language and identified through the Swedish media database "Mediarkivet" and the Swedish Sámi Radio's "Oddasat.se" website were included in the search. In total, 776 print and digital articles were

identified, including news, debate articles, and radio features. After screening and eligibility checks, relevance to Sámi health, 93 articles were included in the study. Excluded items included irrelevant/false positives, duplicates, papers written in other languages and papers with no full-text available in the data bases. Eighty articles in Swedish (including two Finnish-produced Swedish-language news articles concerning border relations with the Swedish part of Sápmi), and 13 in Norwegian. Sixty-three articles were radio features with associated short web articles, 24 articles were from printed press including newspapers, magazines, and their corresponding online editions, and the remaining six were web articles for TV features. A content analysis was performed identifying common themes of importance which were examined in relation to the narrative collection interviews that also formed part of the case study dataset for this region.

Focus groups/sharing circles

A focus group in academic research is a qualitative data collection method where a small, diverse group of participants is brought together to discuss a specific topic or research question [26]. In Indigenous methodologies, a sharing circle is a similar process for sharing information among a particular group [28,29]. Led by a facilitator, participants shared their perspectives, experiences, and opinions in a respectful, semi-structured, interactive setting. The dynamic allows for in-depth exploration of attitudes, beliefs, and social dynamics surrounding the subject. Focus groups are valuable for uncovering nuanced insights, understanding group dynamics, and generating rich data on complex topics. The sharing circle methodology, in particular, also has the added goal of emphasising equality, harmony, and balance wherein all participants sit as equals [30,31], which is why it was chosen for this project – in alignment with the values of the communities in which the method was used.

In the present study, focus groups/sharing circles were implemented in the Alaska case study in 2 communities with a total of 48 participants. This method was selected by the research team and community partners in response to community-identified preference. Insights gained from the focus groups/sharing circles included reflections on a breadth of topics ranging from community mental health to policy and political decision-making to impacts of COVID-19 on livelihood.

Quantitative epidemiological data review

A quantitative epidemiological data review involves the systematic analysis of numerical data related to the

occurrence, distribution, and determinants of health-related events or conditions in a population [32]. It focuses on statistical information gathered from various sources, such as surveys, medical records, and public health databases. Researchers apply rigorous methods to quantify patterns, trends, and associations within the data, allowing for the assessment of risk factors, disease prevalence, and the effectiveness of interventions. This type of review plays a crucial role in informing public health policies, guiding interventions, and advancing our understanding of the factors influencing health outcomes at a population level.

Lead researchers from the participating countries gathered and provided epidemiological data from their home regions on COVID-19 case counts, recoveries, immunisations, and deaths attributed to COVID-19. Over the course of the project, data were also collected on the various public health measures that were implemented in each region as well as regional public health policies. Analyses focused on the production of descriptive statistics and epidemiological curves for each region in relation to the implementation of public health measures in each region, the details of which were published separately [7].

Data integration and analyses

Data from each country were largely presented by nation and/or region, for example, with the production of data tables, which helped to explain case counts or the implementation of public health measures. Each lead research team in each of the seven participating countries led the analyses for their specific case study.

While each of the sites reported on their dataset independently, the team of researchers also gathered for a 3-day immersive results-sharing and collective data analysis process following the processes of *Aajiqatigiinniq* (consensus-based process in the Inuit worldview) and *lqqaumaqatigiinniq* (thinking deeply until coming to a place of realisation in the Inuit worldview), consistent with the overall *Piliriqatigiinniq* research method framework and the implementation science focus [31,33]. This process was collectively agreed-upon by all research leads because it most closely aligned with community-led processes in Sápmi, Inuit Nunangat and homelands from Alaska (“*Umyuallgucitelput Kangiituriiraarluta Nunarpallgutkenritlemteggun*”) to Greenland, and in Iceland (“*sameiginlegt álit*”). Through this collective consensus-building process, common themes emerged, were discussed, and crystalized [34,35]. The collective team of researchers immersed in an *Aajiqatigiinniq* process facilitated by two of the team members to identify consensus on the policy recommendations from the overall datasets.

This process was possible because of the many years of experience, community-based knowledge, and research skill among the team. The collective approach to analysis contributed to the triangulation of data and permitted for cross-site comparisons, which strengthened the overall validity of the study [36].

Validity and reliability

Ensuring validity and reliability in a multi-site case study involves rigorous planning, execution, and analysis. Firstly, the knowledge and experience of the research team was very important. As researchers who are either from or have longstanding relationships with Arctic communities, the team was grounded in the ethical and cultural expectations of the communities being served through the study. The research team had deep knowledge of the community and context of each of the case study sites. In addition, the following processes and steps contributed to increased reliability and validity of findings: clear research design; standardised data collection; regular team communication, peer debriefing/relational ways of knowing; and a consensus-based results and data analysis in-person workshop.

Clear research design

The team worked to define research questions, objectives, and case selection criteria at the beginning of the project, as a collective. Cases were selected based on relevant criteria to address the research questions effectively as well as community interest and response, identifying whether they were interested in participating or not. This type of community partnership research method is documented elsewhere [33], but was often led by municipalities and/or individual community leaders or organisations.

Collective agreements on data collection

The team developed a shared set of questions and protocol for data collection to maintain some level of consistency across sites and to ensure focus on answering the research questions. Lead scholars provided clear instructions to data collectors and ensure they were aware of the overall goals of the study and the need to be responsive to communities.

Regular team communication

Maintaining consistent communication among the research team members across sites was essential. A shared software platform was used to prompt text-

based discussion, and a filesharing platforms were used to hold data, reports, and images (Slack and Dropbox). The team openly discussed challenges, interpretations, and potential biases to ensure a unified approach.

Peer debriefing and relational ways of knowing

The team engaged with colleagues or experts who were not directly involved in the study, but who had knowledge, advice or experience that were relevant to the topics arising in the case studies. Seeking out this input is a way of honouring the relational nature and approach adhered to by many of the research team members and which emulates the values of the communities served through this research [28,37]. Input and advice was sought on the research design, methods, and preliminary findings to enrich the interpretations of the results.

Discussion

This study included the combination of numerous data collection methods and datasets. Methods were integrated in such a way as to enrich the study and honour the communities served through the study. Overall, a more comprehensive understanding on the impacts of COVID-19 on Arctic Indigenous and remote communities was obtained. The participatory community-based approach was essential to this project. This approach privileged Indigenous knowledge and local knowledge and the experiences that drove the response to COVID-19 in Arctic communities.

Strengths of the study included 1) the integration of methods, which ensured that a diversity of voices and perspectives were captured in the study; and 2) responsiveness to specific sites/communities to ensure research adhered to local protocols, ethics, and values. This also allowed for the exploration of unique contextual factors in each community. Challenges encountered during the study included 1) navigating around the ever-changing landscape of the global COVID-19 pandemic; and 2) the Russia-Ukraine War had an impact on the original composition of the research team, which initially intended to include researchers and perspectives from communities in the Russian Arctic.

Challenges of the study included the volume of data collected through multiple pathways and the reconciliation of findings across methods and languages. These challenges were addressed through in-person collaborative data analysis, regular communication, dedicated space for dialogue and problem-solving, and a shared value system based on care and compassion for the Arctic communities that were involved in the study.

This study engaged multiple research methods to explore a complex problem, be responsive to community needs in a time of crisis, and also to counter extractive research practices, which are not typically responsive to local needs or community-based [12,38–41,41]. Traditional research methods have historically treated communities and cultures as objects of study, extracting knowledge and data for academic purposes without reciprocal benefits or considerations for the community's well-being [42], and often proceeded without local validation of analysis thereby imbedding misunderstanding and biases in the literature. Decolonising research methods strive to move away from extractive practices and towards research that is reciprocal, ethical, and contributes to community empowerment and self-determination, and increases the validity of results [43–45]. Using multiple methods in this study offered a number of advantages including generating unique and diverse perspectives across sites, as well as identifying similarities across Arctic communities; decolonising traditional academic methods and holding space for the elevation of Indigenous and community-led approaches; triangulation of data and enhancement of validity; more in-depth understanding of the responses to the research questions; and flexibility in the context of the shifting nature of work and gathering during the pandemic. Different methods provide unique perspectives and generate different types of data [11,37]. Combining methods allowed researchers to gain a more comprehensive and nuanced understanding of the research topic by exploring findings across multiple sources.

Traditional research methods have often perpetuated power imbalances between researchers and the communities they study [12,41,46]. Decolonising research methods seek to challenge these power dynamics by promoting more equitable and collaborative research practices that involve meaningful engagement, participation, and partnership with marginalised communities [42]. Being mindful of this approach, the research team worked to ensure that research was conducted with, rather than on or for, communities, empowering them to be active agents in shaping the research process.

Incorporating multiple methods provided the research team with flexibility in data collection and analysis. Researchers adapted their approach based on the unique characteristics of the research setting, participants, or available resources while remaining within the parameters of the research questions at hand [37]. Combining multiple methods encouraged methodological innovation, embraced paradigms from a diversity of cultures, and supported overall

advancement in research [37,47,48]. This innovation contributes to the evolution of research methodologies and promotes interdisciplinary collaboration.

Using multiple methods in the present research study provided numerous advantages. By embracing the strengths of a diversity of methods, this research team was able to conduct more robust and impactful studies exploring the impacts of a massively complex issue, such as the COVID-19 pandemic that will have far-reaching implications for public health policies and interventions into the future.

Conclusion

Documenting this multi-site mixed methods case study approach to public health in the Arctic has been crucial for several reasons. This approach provided a comprehensive, evidence-based account of the complex health challenges facing Arctic communities, offering insights into the effectiveness of interventions.

Additionally, the mixed method multi-site case study approach contributes to the broader body of knowledge in public health, enriching the understanding of unique regional health disparities. Our work also makes an invaluable contribution to the methodological literature, by demonstrating and effective and decolonised pathways for addressing complex issues across Arctic contexts.

A well-documented approach allows for transparency, replication, and peer review, ensuring the rigour and credibility of the research in addressing critical public health issues in the Arctic.

This article serves as a valuable resource for policy-makers, researchers, and healthcare professionals, informing future strategies and interventions.

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