

RESEARCH PROTOCOL

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Decolonizing Water Discussions: A Look at the Indigenous Water Crisis in Canada from an Anti-Settler Colonialist Perspective

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Abstract

Introduction: Canada is one of the most water-rich countries in the world, so it may be surprising to hear that many Indigenous communities do not have access to clean drinking water. Due to colonial legacies that have been supported in Western society for centuries, Indigenous Peoples have been denied guaranteed access to clean drinking water by the Canadian government. This is a violation of fundamental human rights. Furthermore, research in this area is incredibly important to Indigenous Peoples' quality of life in Canada. Previous research has shown that drinking tap water filled with parasites, bacteria, and heavy metals can lead to serious health, socio-economic, and cultural issues in Indigenous communities. This research protocol aims to survey members of several Indigenous communities in Canada to gain insight on the state of water quality, chemically analyze the water, and understand settler-colonialism's role in modern day policy to improve water accessibility in those communities.

Methods: This study will focus on determining the accessibility, reliability, and quality of drinking water made available by the Canadian government compared to alternatively sourced water, if applicable. For alternative water sources, biocultural indicators, and the observational indicators used to assess water, utilized by Indigenous community members will be recorded. Samples of water from multiple sources will be collected and analyzed for turbidity, and the presence of pathogens.

Results: As a proposed study we have predicted findings based on existing literature. We expect significant reports of water advisories and the usage of alternative sources of water or unsafe drinking water, posing an increased risk for health issues such as higher rates of gastrointestinal diseases, diabetes, and obesity.

Discussion: Funding issues serve as one of the key underlying obstacles to drinking water advisories in Canada, both in terms of underfunding and an outdated funding formula for water treatment systems. The means to sustain and employ these systems are crucial to ensure safe drinking water is continually available.

Conclusion: It is our hope that through this research, we will contribute data that will better inform policy and awareness to improve the equitable access to clean water in Indigenous communities across Canada.

Keywords: Indigenous; human-rights; water; health; policy; awareness; settler-colonialism; accessibility

Introduction

As of 2021, there are 71 Indigenous communities in Canada under drinking water advisories [1]. According to the United Nations' 2002 International Covenant on Economic, Social and Cultural Rights, water is recognized under international law as a basic human right [2]. While the Canadian government is a signatory to this treaty, it is directly failing to meet its obligations to Indigenous communities by providing water that is clean and accessible [2]. The inaction in response to this violation of human rights shows that the government is part of the problem. Such institutions were created through settler-colonialism, meaning that to this day many Canadian laws and legislature have outdated notions [3]. When white settlers first came to Canada they stole Indigenous land without purchase or treaty [4]. Indigenous communities were

slaughtered, forced into residential schools, and told their way of life was "lesser than," all while Western history books were whitewashed to diminish the atrocities committed by white settlers [4]. This way of thinking frees settler peoples from worrying about the moral and ethical implications of living in a nation founded on genocide, racism, and dispossession [4]. By determining the ways that histories are written, settler societies, like Canada, possess and maintain the only legitimate claims to the land and can establish institutions deeply embedded with racism that became naturalized, normalized, and unchallenged [4]. Settler-colonialism has disrupted the natural water sources that Indigenous peoples depend on. Treaties used by settlers effectively caused Indigenous Peoples to forfeit their rights to the land and its resources, from a government perspective, in exchange for goods, money, and promises

[5]. Policy, laws, and legislation were built to benefit white settlers, and many remain the same to this day [4]. Settler-colonialism perpetrated by the Canadian government's inaction, paired with the lasting effects on Indigenous communities without clean drinking water, prioritizes economic interest at the expense of human life [4].

This research paper seeks to influence policy-making involving Indigenous communities in Canada and aims to introduce the reader to how settler-colonialism plays a large role in the lack of accessibility to drinking water in Indigenous communities. Research in this field is relevant to much more than just the scientific community because lack of access to clean drinking water is a violation of basic human rights. Research can influence policy-making therefore research in this field is incredibly important to Indigenous communities' quality of life across Canada [6]. This research paper plans to answer the following question: what is the current state of water quality and access in Canadian Indigenous communities and what measures can be taken to improve relevant policies for more equitable access to water?

Methods

Through this proposed study, our goal is to incorporate a "cross-cultural" approach [7]. That is, integrating Indigenous knowledge, values, and perspectives with Western scientific methods by extending the methods used by Russell, et. al (2020) in their Northern Australian study on water quality in the billabongs of the Indigenous Ngukurr community. First, we propose to survey members of Indigenous communities in the provinces with active long-term drinking water advisories [8] across Canada. This would include a subset of communities of each province, with more communities included in larger provinces. These surveys would begin in Ontario (Bearskin Lake, Chippewas of Nawash First Nation, Mohawks of the Bay of Quinte, Nibinamik First Nation); working out towards Saskatchewan (Little Pine and Star Blanket Cree Nation); ending up in Manitoba (Shamattawa First Nation, Tataskweyak Cree Nation), in order to gather perspectives, based on location, on their access to water, and the reliability of their water, as well as to determine if alternative sources of water such as bottled water, private wells, or use of contaminated water [9]. To increase accessibility for remote communities in this study interviews could be conducted over a video call platform. In particular, we intend to visit communities and interview Indigenous community members, focusing on utilizing the strengths of the communities to align "what should be" with the "what will be" according to the Appreciative Inquiry Method [10]. As opposed to third-party analyses, such as government reports, this would serve to provide a more holistic sense of effective policies, and from the experiences of people who regularly need to use this water. Additionally, to effectively guide more equitable policies, we hope to examine whether specific issues are being neglected or, on the contrary,

overemphasized by government action and/or media coverage.

Further information on alternative sources of water would be collected. We would expect some of these sources to include bottled water, private wells, or even continued use of contaminated water [9], given that regularly outsourcing bottled water can be cost-prohibitive [11]. Based on the work of Russell, et al. with the Ngukurr community in Australia [7], when people are faced with inadequate access to clean water, they may use observational assessments, or *biocultural indicators*, to assess alternative water sources. Some potential factors that may be observed based on this previous research may include seasonality, where certain times of year have specific conditions affecting the safety of water for drinking; geomorphology and hydrology, that is the size and flow of water sources; the taste of water; stagnation of water; observing specific plants or animals near waters sources; visual assessment of water turbidity; and intuition [7], among various other factors.

Subsequently, this study would analyze the water consumed by Indigenous communities through Western scientific methods, based on Health Canada's own "Guidelines for Canadian Drinking Water" [9]. Water samples would be collected in clear labeled bottles, stored at a consistent temperature (between 4-6 degrees celsius), and held for a holding time of 30 hours for optimal data analysis [12]. Analyses would include measures on a microbial level, such as the presence of bacteria, eg. *E. coli*; Heterotrophic plate counts (HPC) to measure bacteria that consume organic material; and total coliforms, bacteria found in water due to human or animal fecal waste [9]. As well, water would be analyzed for concentration of heavy metals using ICP-OES (Inductively coupled plasma - optical emission spectrometry) [13] and which should not exceed MAC (maximum acceptable concentration) as outlined by the Guidelines for Canadian Drinking Water [14]. Finally, the water would be measured for turbidity via turbidity meters; surface water should ideally measure 0.1 NTU (nephelometric turbidity units) for human consumption, with acceptable values of 0.3 NTU or less [9]. Any value above 1.0 NTU should be cause for immediate concern [9].

Results

This research paper was theoretical, thus no results were obtained. However, based on reports and existing academic literature, some expected results may be inferred.

Given Indigenous communities are 2.5 times more likely to experience water advisories than non-Indigenous communities [15], and reports of water advisories from 2015 to 2021 indicate 37.5% of existing long term water advisories remain in public water systems on First Nation reserves [3], we would expect a significant number of respondents to mention issues with these water advisories. Water advisories may include boil-water advisories, where water must be boiled for at least 1 minute to kill bacteria, parasites, or

viruses before consumption [15]; do-not-consume advisories; and do-not-use advisories, where skin contact is unsafe due to toxins or chemicals [11].

Additionally, where water sources are unsafe for consumption or unreliable to access, we would expect survey reports of increased rates of known health issues associated with poor water in Indigenous Canadian communities. These issues may include gastrointestinal illnesses, such as *Giardia* [15], and skin conditions, such as eczema, impetigo and cellulitis [16]. Further adverse health risks may arise when the cost of procuring clean water becomes more expensive than, for example, soft drinks, increasing the risk of diabetes, obesity, hypertension, autoimmune disorders, and liver/kidney disease [16].

In fact, a 2013 study conducted by Sarkar et al. investigated drinking water in the Black Tickle-Domino community, a remote Inuit island community in Newfoundland and Labrador, converging on methods similar to our proposal, where they interviewed key community leaders and utilized group discussions, while also analyzing water samples [17]. In the Black Tickle-Domino community, access to clean drinking water was fraught with financial barriers and health issues. High annual costs to operate the portable drinking water units to treat pond water, \$30 000 per year, as well as expensive costs for residents to use these units, at a price of \$2 per litre as of 2015, and inconsistent availability of bottled water at local stores made clean water difficult to access. As a result, residents would consume the free chlorinated tap water, which was only safe for cleaning, but not drinking. Issues were further compounded given available water was not palatable and bottled water was in fact more expensive than soft drinks. The researchers anecdotally observed high levels of type 2 diabetes amongst community members as well as restrained water consumption, which they attributed to these barriers.

Considering the high rates of water advisories in Indigenous communities [15], and the findings of water access in the Black Tickle-Domino community, which continues to experience boil water advisories to this day [18], we predict similar results may exist in other communities within the country. We are also cognisant that beyond physical health, poor water quality may also be detrimental to spiritual health in Indigenous communities [15]; water is important to many Indigenous communities for healing and spirituality [15].

Discussion

Indigenous Peoples' mistrust of the Canadian government is no surprise. For over a hundred years the Canadian government wanted to assimilate Indigenous peoples into Western culture, so they forcibly removed and isolated Indigenous children from the influence of their homes, families, traditions and cultures, and "re-educated" them in residential schools [19]. These children were inadequately fed, clothed, housed, cared for and often were victims of abuse [19]. In 2008, then Canadian Prime Minister

Stephen Harper gave an apology that acknowledged the federal government of Canada had viewed Indigenous cultures and spiritual beliefs as inferior and unequal and apologized for the government's role in depriving children care from their parents, grandparents, and communities [19]. In part of atrocities associated with settler-colonialism in Canada (i.e. the impact of residential schools), the mistrust Indigenous communities have with the government is rooted in lived experience.

Historically the Canadian government is a nation founded on genocide, racism, and dispossession [4]. To this day, the Canadian government is not making adequate strides to improve the living conditions of Indigenous Peoples [20]. The government is violating the basic human rights of those without access to clean drinking water by severely underfunding and under researching water treatment systems [3].

Despite a commitment by the federal government in 2015 to end long-term water advisories on First Nation reserves by March of 2021 [3], there are still 55 active water advisories [21, 22], 33 of which are long term advisories affecting 29 communities [21]. As outlined by the Auditor General of Canada's "Access to Safe Drinking Water in First Nations Communities" report, lack of adequate funding persists as a key issue [3]. Specifically, the formula used to determine funding for operations and maintenance of water systems is outdated [3]; it was first established by Indigenous Services Canada (one of the two departments in the Canadian federal government responsible for policy-relevant to Canadian Indigenous Peoples) in 1987 where it has only received adjustments for inflation [3]. Consequently, this structure does not account for the realities of new technology nor the actual costs to maintain and operate these water systems [3]. Furthermore, Indigenous Services Canada's policy for maintenance and operation of water systems has not been updated since 1998, thus Indigenous Services Canada will not follow its own obligations to cover 80% of costs, as it cites it will not adhere to outdated policy, which has been made by itself [3]. Funding issues are visibly evident: salaries of water system operators on First Nations reserves are 30% lower compared to non-reserve operators, and over a quarter of these public water systems lack a fully trained operator [3]. In sum, outdated policies on water systems and insufficient funding is a source perpetuating these long-term water advisories.

Study Limitations

Through the cross-cultural approach of this study, it is important to recognize our limitations and qualifications when interpreting the results of this study. The authors wish to identify the limitations in creating a research proposal of this nature. We recognize that as non-Indigenous researchers, our perspectives may differ with those from Indigenous communities.

Conclusion

Lack of access to clean drinking water has created a critical health issue that has led many Indigenous communities in Canada to drink unsafe water or use costly alternative sources, an issue that has been neglected for far too long. This research seeks to understand the health impacts of drinking unsafe water, to spread awareness of how settler-colonialism impacts current policies, and to better inform policy to effectively provide safe drinking water to Indigenous communities. Preliminary research on this topic suggests that the key to providing systemic change begins at the funding level [3]. It is our hope that this study will inform policies that increase said funding and implement necessary changes to ultimately improve quality of life in the impacted Indigenous communities across Canada.

Conflicts of Interest

The authors declare that they have no conflict of interest.

Ethics Approval and/or Participant Consent

This study does not use ethics approval or participant consent given it is a theoretical study.

Authors Contribution

BSR: made substantial contributions to the design of the study, revised the manuscript critically, gave final approval of the version to be published, and agreed to be accountable for all aspects of the work.

MES: made substantial contributions to the design of the study, revised the manuscript critically, gave final approval of the version to be published, and agreed to be accountable for all aspects of the work.

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