

RESEARCH ARTICLE



Mortality in Innu communities in Labrador, 1993-2018: a cross-sectional study of causes and location of death

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ABSTRACT

In Canada, most people prefer to die at home. However, the proportion of deaths that occur in hospital has increased over time. This study examined mortality rates and proportionate mortality in Innu communities in Labrador, and compared patterns to other communities in Labrador and Newfoundland. We conducted a cross-sectional ecological study with mortality data from the vital statistics system. This included information about all deaths in Newfoundland and Labrador from 1993 to 2018. We used descriptive statistics and rates to examine patterns by age, sex, cause and location. During the 2003 to 2018 period the leading cause of death in the Innu communities (excluding external causes) was cancer, followed by circulatory disease and respiratory disease. Between 1993 and 2018, there was a lower percentage of hospital deaths and a higher percentage of at home deaths in Innu communities than in the rest of the province. The majority of deaths among Innu were due to cancer and chronic diseases. We found a higher percentage of at home deaths in Innu communities compared to the rest of the province.

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Introduction

Improving access to high quality and patient-centred end-of-life care is a health system and public health priority in Canada and globally [1,2]. Evidence consistently shows that most people prefer to die at home [3–5]. However, the extent to which home deaths occur varies within and between countries [6], and many people die in hospital. In an international comparison of forty countries, the percentage of people who died in hospital ranged from 11% to 78% [6]. In 2018, approximately sixty percent of deaths in Canada occurred in hospital but there were substantial differences between jurisdictions; hospital deaths were most common in Quebec (80%) and Manitoba (76.6%) and but less common in British Columbia (42%) and Nunavut (38.3%) [7]. In part, the geographic variations in hospital deaths may be related to differences in the way these deaths are counted. For example, in Quebec, deaths in long-term care facilities are included as hospital deaths, which is not the case in other provinces. Other factors that may drive variations between jurisdictions include patient

preference [5], access to palliative and end-of-life care [8], and cultural expectations and traditions [8,9].

Rates of hospital deaths in Canada's three northern territories are lower than the national rate in Canada [7]. While limited access to hospital beds and differences in the leading causes of death may partially account for the lower prevalence of hospital deaths, patient preferences for home deaths in Indigenous communities in the North may also play a role [9,10]. A qualitative study with Inuit in Nunavut showed that participants preferred care within the community and with family involvement, and that costly and extensive medical travel was a barrier to end-of-life care [10]. This was consistent with a related qualitative study in an Innu First Nations community in Labrador, where Elders and other community members indicated a strong preference to care for dying family members in the community, rather than in hospital [11].

Nationally, there is limited population-based data about where Indigenous peoples die and how patterns in the location of death compare to non-

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Indigenous or general populations [12]. Such evidence is needed for both health policy and localised health system planning [11]. This is the case in Labrador [11], a subarctic region in Atlantic Canada. This study was part of a larger, mixed-methods investigation of Innu First Nations approaches to end-of-life care [11] that was developed in response to community leaders' request for evidence to inform health service planning related to community-based palliative care.

To complement a previous qualitative study [11], we developed this epidemiological study to provide a population-level assessment of causes and location of death in Innu First Nations communities in Labrador. The specific objectives of were to: (1) examine variations in mortality rates in Innu communities over time and by age group, sex, and location of death; (2) determine the leading causes of death in Innu communities; (3) and compare proportionate mortality and mortality rates in two Innu communities (Sheshatshiu and Natuashish) to other communities in Labrador and to the island of Newfoundland.

Method

Design

We used a community-based approach [13–15] to conduct a cross-sectional ecological study with routinely collected mortality data. Our methodology was guided by the principles for ethical research involving Indigenous communities [16,17], and by the specific practices and relationships for research in Innu communities [18]. This project emerged from a collaboration between the Innu Nation, the Sheshatshiu Innu First Nation Band Council, the regional health authority (Labrador-Grenfell Health), and Memorial University.

Ethics approval

We obtained institutional and ethical approval to conduct this study from the Innu Nation, Labrador-Grenfell Health, and the provincial Health Research Ethics Authority (REB# 20192163). The ethics approval process included co-developing a research agreement with the Innu Nation, which was signed by the Grand Chief, and obtaining a letter of support from the Chief of the Sheshatshiu Innu First Nation. The results of this study are reported based on the Reporting of studies Conducted using Observational Routinely-collected Data (RECORD) guidelines [19].

Setting and population

This study was focused on mortality in the two Innu First Nations communities, Sheshatshiu and Natuashish. These communities are located on the mainland (Labrador) portion of the province of Newfoundland and Labrador, Canada. Based on census data, the population of Sheshatshiu in 2016 was estimated to be 1,023, of which ~94% were Innu [20]. The community of Natuashish is located on the North Coast of Labrador; approximately 300 km by air from the regional hub community, Happy Valley-Goose Bay. Natuashish is the second-most northern community in the province and is accessible year-round only by air, and seasonally by boat and snowmobile. Natuashish was founded in 2002, when the Mushuau Innu relocated from the community of Davis Inlet (Utshimassit). In 2016, the estimated population of Natuashish was 936, and was predominantly Innu (89%) [20].

The communities are locally governed by the Sheshatshiu Innu First Nation Band Council and the Mushuau Innu First Nation Band Council. The Innu Nation is the governing authority that represents both communities. The Innu of Labrador were recognised under the federal Indian Act in 2006, at which time the two communities became federal reserves. In 2011, the Labrador Innu signed the Tshash Petapen (or "New Dawn") Agreement with the federal and provincial governments, which included the Innu Land Claim and Self-Government Agreement-in-Principle [21].

We used two comparison populations, the non-Innu communities of Labrador and the island of Newfoundland, to help situate Innu mortality rates and location of death in a regional and provincial context. The non-Innu communities in Labrador included both Inuit and non-Indigenous populations. Inuit are an Indigenous people with traditional territories in Labrador and Arctic regions in Canada and other circumpolar nations [22]. Inuit are distinct from the Innu, who are a First Nations people. In 2016, the thirty ($n = 30$) non-Innu communities in Labrador ranged in size from under 20 to 8,109 people [20]. These communities are distributed across the northern and southern coasts and the central region. The island of Newfoundland was the other comparison region. In 2016, the population of Newfoundland was 501,612, and was predominantly non-Indigenous [20].

Health services in Labrador are delivered primarily by provincially-funded service providers under the authority of the provincial health authority (NL Health Services). During the study period, there was a regional health authority in place (Labrador-Grenfell

Health). The Innu communities are served by a hospital (the Labrador Health Centre) in Happy Valley-Goose Bay. Family physicians, nurse practitioners, and nurses provide primary, emergency, acute, and long-term care services through the hospital and local clinics, which are present in most communities. Overall, Labrador experiences disparities in the supply of physicians and nurses compared to urban areas of the province [23] and many communities in the region have limited access to comprehensive medical services including palliative care.

Data sources and variables

The primary data source for this study was Statistics Canada's Annual Mortality Data Files. The dataset included data derived from death certificates completed by physicians for all deaths among residents of Newfoundland and Labrador. For the current study, we obtained information on year of death, cause of death, sex (female/male), age, community/region, and location of death for deaths that occurred between 1993 and 2018. Underlying cause of death was coded using the World Health Organization's *International Statistical Classification of Diseases and Related Health Problems*, Ninth Revision (ICD-9) for deaths that occurred between 1993 and 1999 and the Tenth Revision (ICD-10-CA) for deaths from 2000 to 2018. For the population counts, we used census and annual intercensal data from Statistics Canada for each year in the study period. The data were provided by the Newfoundland and Labrador Centre for Health Information.

As this study was part of a larger project on palliative care [11], we were interested in causes of death that were most likely to have been appropriate for palliative care, such as cancer, cardiovascular disease, chronic lung disease, and chronic organ failure [24]. Clinical information on individual eligibility for palliative care prior to death was not available from the dataset. For the analyses related to mortality rates and location of death, we excluded deaths with causes that were less likely to be eligible for palliative care, such as external, pregnancy-related, perinatal, and congenital causes (see Appendix 1).

The database does not include an "Indigenous identifier" or other variable on race or ethnicity, as this information is not routinely collected in vital statistics systems in Canada [25]. Therefore, we could not categorise Indigenous status (e.g. Innu, Inuit, Mi'kmaq, or non-Indigenous) for each person who died. As an alternative, we used "community of residence" as a geographic proxy variable for being Innu or non-Innu. This approach is possible because the majority

of people (~92%) who live in the two Labrador Innu communities are Innu, and non-Innu may only be temporary residents. For the purposes of our analysis, we assumed that anyone who had an address on their death certificate from a community other than Sheshatshiu or Natuashish/Davis Inlet was non-Innu. This approach has previously been used in studies in Labrador and nationally in Canada when census data can identify areas such as communities or census subdivisions which are mostly comprised of Indigenous peoples [15,26,27].

Statistical analysis

We used descriptive statistics including frequencies and proportions and crude and age-standardised mortality rates to analyse the data. Statistics were stratified by covariates which included sex, age group, location of death, and ICD chapter of underlying cause of death. Due to small populations in the Innu communities, the number of deaths in each subgroup was relatively small when disaggregated. Thus, in order to obtain cell counts which were large enough for release and adequate for statistical analysis, we pooled annual mortality data and population data by creating two time periods (1993–2002 and 2003–2018). The calendar year 2002 was chosen as the cut-point for the first period because it was the year that the Innu community of Davis Inlet was relocated to Natuashish.

Mortality rates were age-standardised using the direct method based on the 2011 Canadian census population as the standard population. For proportionate mortality by cause and for crude rates for the Innu communities, data were pooled into a single period (1993–2018). Causes of death that were excluded from the mortality rate analysis, were included as an aggregated category of "external, pregnancy-related, and paediatric causes" of death in the proportionate mortality analysis. Mortality rates and proportions for the Innu communities were compared to those for the rest of Labrador and the island of Newfoundland. Mortality rates were also compared between the two Innu communities. Chi-square tests were used to compare location of death between the Innu communities, Labrador, and Newfoundland.

Results

From 1993 to 2018, there were 115,253 deaths among residents of Newfoundland and Labrador. This included 237 deaths of people from the Innu communities, 3,074 deaths from other communities in Labrador, and

111,942 from Newfoundland. In the Innu communities, 62.4% ($n=148$) of people who died were from Sheshatshiu and 37.6% ($n=89$) were from Davis Inlet/Natuashish. Proportionate mortality was highest for cancer (neoplasms) and circulatory diseases in all

regions for both periods though the ranking of all leading causes changed slightly between the two periods (Figure 1, including external causes; Table 1). For the total period of 1993–2018, cancer accounted for 18.1% ($n=43$) of all deaths in the Innu communities

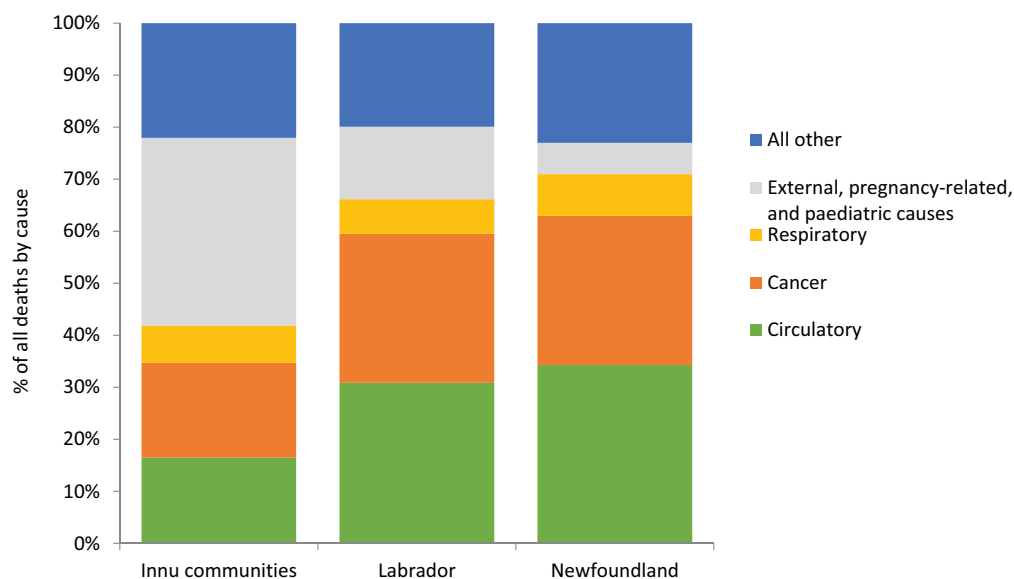


Figure 1. Proportionate mortality by all causes in Innu communities, 1993–2018.

Note: “External, pregnancy-related, and paediatric causes” causes of death include suicide, transportation injuries (car/truck, ATV, boat, snowmobile), assault, complications related to pregnancy and childbirth and congenital disorders.

Table 1. Crude mortality rates per 100,000 by sex, age group, location of death and underlying cause in Innu communities, Labrador, and Newfoundland.

Characteristics	Innu communities		Rest of Labrador		Island of NL	
	1993–2002	2003–2018	1993–2002	2003–2018	1993–2002	2003–2018
Sex						
Male	358.0	344.4	348.7	496.8	780.2	908.0
Female	242.0	257.0	256.2	388.6	653.5	831.8
Both sexes	300.4	300.9	304.0	444.3	716.4	869.3
Age Group						
<35	44.1	62.3	25.6	31.3	21.4	21.2
35–54	461.5	340.6	143.8	175.8	177.4	175.5
55–74	2870.3	1692.0	1509.2	1033.2	1542.6	1142.3
75+	4225.4	6490.4	8107.3	7325.2	8359.5	7947.7
Location of death						
Hospital	73.4	161.8	103.8	278.3	241.0	558.8
Private home	60.1	107.9	19.3	85.5	33.1	117.3
Nursing home or long term care	0.0	11.4	16.8	62.5	57.7	173.8
Other specified locality	13.4	19.9	11.8	17.3	23.1	18.5
Unknown	13.4	0.0	3.2	0.7	6.2	0.9
Chapter of underlying cause of death						
Neoplasms	106.8	76.7	94.5	153.7	209.2	269.3
Circulatory	60.1	85.2	119.2	128.4	307.9	283.2
Respiratory	60.1	22.7	26.1	33.0	56.2	76.9
Endocrine	20.0	25.6	13.6	31.5	34.7	53.5
Nervous	13.4	8.5	10.4	14.4	28.9	37.8
Symptoms, Signs, and Ill-defined Conditions	13.4	14.2	5.0	6.4	9.8	13.0
Other	6.7	34.1	6.4	21.3	11.5	20.1
Digestive	6.7	14.2	11.8	19.8	22.6	34.9
Mental	6.7	11.4	5.4	20.1	13.1	43.8
Infectious	6.7	5.7	4.3	7.2	6.6	11.2
Genitourinary	0.0	2.8	7.2	8.7	15.9	25.6

Crude rates are per 100,000 population; “Other” includes all other causes except external injuries, pregnancy-related, or paediatric causes, which were excluded from this analysis.

(Figure 1). For the province, just under 6% ($n = 6,733$) of all deaths were due to pregnancy, childbirth, or perinatal conditions, external causes such as transportation-related injuries and suicide, or paediatric conditions such as congenital disorders; this included 36% ($n = 86$) of all deaths in Innu communities, 14% ($n = 432$) of all deaths elsewhere in Labrador, and 6% ($n = 111,942$) of deaths in Newfoundland (Figure 1). These deaths were excluded from subsequent mortality rate estimates.

For the 1993–2002 period, the age-standardised mortality rate was highest in the rest of Labrador, and lowest in Newfoundland. From 2003–2018, the mortality rate was highest in the Innu communities (Figure 2). For the total period, 1993–2018, the age-standardised mortality rate was higher in Davis Inlet/Natuashish (1121.8 per 100,000) than in Sheshatshiu (900.6 per 100,000). The age-standardised mortality rate for all natural causes (excluding external, pregnancy-related, and paediatric causes) of death increased by 9.1% in the Innu communities between the two periods, 1993–2002 and 2003–2018 (Figure 2). By contrast, the age-standardised mortality rate for natural causes decreased in the rest of Labrador by 14.1%, and decreased in Newfoundland by 13%.

Overall, crude mortality rates were highest among males in all regions for both periods (Table 1). Crude mortality rates increased with age in all regions and were highest among the 75 years and older group (Table 1). Changes to age-specific mortality rates between the two periods varied by geography. In the Innu communities, age-specific rates decreased for

adults aged 35–54 and 55–74 between the two periods, and increased for the youngest and oldest age groups (Table 1).

In-hospital crude mortality rates were lowest in Innu communities and highest in NL. Rates more than doubled between the two periods in all regions (Table 1); rates also increased for deaths in private residences and nursing homes or long-term care facilities.

Within the Innu communities, there were some cause-specific differences in mortality between Sheshatshiu and Natuashish (Table 2). Both communities had a similar rate of death from circulatory diseases, but the mortality rate due to cancer was nearly one and a half times higher in Sheshatshiu (rate ratio 1.46). By contrast, the mortality rate due to respiratory diseases was two times higher in Natuashish.

The frequency and proportion of natural deaths (excluding external, pregnancy-related, and paediatric causes) by location of death is reported in Table 3. The proportion of people from Innu communities that died in hospital was significantly lower than in the rest of Labrador (54% vs. 63.6%; $\chi^2 = 4.7115$, $p = .03$) and Newfoundland (54% vs. 64.8%, $\chi^2 = 6.4867$, $p = .01$). By contrast, the proportion of deaths that occurred at home was more than two times higher in the Innu communities than in the rest of Labrador (37.3% vs. 17.9%, $\chi^2 = 29.0342$, $p = 0.00001$) and Newfoundland (37.3% vs. 12.6%, $\chi^2 = 70.0271$, $p = <0.00001$). At the community level, a larger proportion of people from Sheshatshiu died in hospital compared to those from Natuashish; 22% of people who died from Natuashish

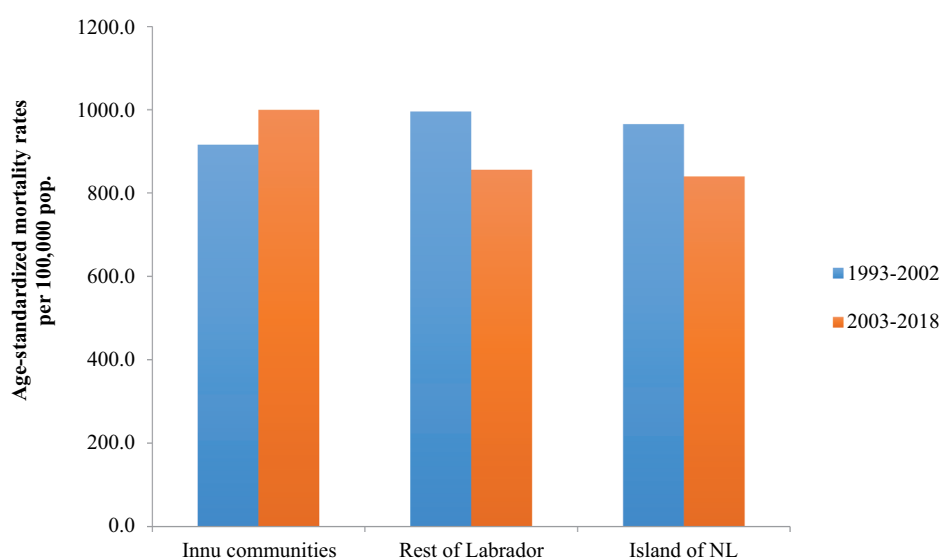


Figure 2. Age standardised mortality rates due to natural causes in Innu communities compared to Labrador and Newfoundland, 1993–2018. Note: Excluding external, pregnancy-related, and paediatric causes.

Table 2. Mortality rates by cause in Sheshatshiu and Natuashish, 1993–2018.

Cause of death	Sheshatshiu		Davis Inlet/Natuashish	
	# of deaths	Mortality rate*	# of deaths	Mortality rate*
Circulatory	24	74.8	15	82.8
Neoplasms	31	96.6	12	66.3
Respiratory	8	24.9	9	49.7
Endocrine	8	24.9	–	22.1
Digestive	5	15.6	–	5.5
Nervous	–	3.1	–	22.1
Mental	–	9.3	–	11.0
Symptoms, Signs, and Ill-defined Conditions	5	15.6	–	11.0
Genitourinary	–	3.1	–	–
Infectious	–	9.3	–	–
Other	8	24.9	5	27.6

Cells with “–” indicate suppression of small counts (less than 5) due to privacy policies. *Mortality rates are crude rates per 100,000 people.

Table 3. Location of death in Innu communities, 1993–2018.

Location of Death	Sheshatshiu		Natuashish		Innu Communities (n = 128)*		Rest of Labrador (n = 2,223)		Newfoundland (n = 87,219)	
	# of deaths	%	# of deaths	%	# of deaths (n = 128)*	%	# of deaths (n = 2,223)	%	# of deaths (n = 87,219)	%
Hospital	50	60.2%	18	43.9%	68	54.0%	1413	63.6%	56529	64.8%
Private home	33	39.8%	14	34.1%	47	37.3%	399	17.9%	10949	12.6%
Other facility	–	–	–	–	–	–	299	13.5%	16682	19.1%
Other location	–	–	–	–	–	–	103	4.6%	2661	3.1%
Unknown	–	–	–	–	–	–	9	0.4%	398	0.5%

*Location of death for Innu communities was unknown for 25 people. Cells with “–” indicate suppression of small counts (less than 5) due to privacy policies.

died in locations other than a health facility or home, such as during transport from the community to a regional hospital or in another location in the community; there were no deaths in Sheshatshiu in these locations.

Discussion

This study used vital statistics data to examine mortality rates, leading causes of death, and locations of death in Innu First Nations communities in Labrador in comparison to the remainder of Labrador and the island of Newfoundland. We found that crude mortality rates rose across all three regions, but that after adjusting for age, mortality rates increased only in the Innu communities. The three leading causes of death (external causes excluded) across all three regions were neoplasms, circulatory disease, and respiratory disease. Additionally, there were proportionately fewer hospital deaths and more home deaths in Innu communities than there were in the rest of Labrador or Newfoundland, although the majority of Innu deaths still occurred in hospital.

Nationally, patterns of mortality are similar to those found in non-Innu communities in Labrador and in Newfoundland: crude mortality rates increased, while age-standardised mortality rates decreased [28]. Over the entire period (2003 to 2018), the pooled age-standardised mortality rate in the Innu communities in

Labrador (999.8 per 100,000 population) was higher than in any given year in the period in Canada overall (highest in 2003 at 825.6, lowest in 2016 at 664.4) [28].

Nationally, the three leading non-external causes of death in Canada during the study period were malignant neoplasms, major cardiovascular diseases, and chronic lower respiratory diseases; our findings for all regions were consistent with this pattern [28]. An international study examining Indigenous mortality found that age-standardised mortality rates for Indigenous populations were lower than non-Indigenous populations for total malignant neoplasms, ischaemic heart disease, cerebrovascular disease, and other chronic obstructive pulmonary disease [29]. In other circumpolar contexts, the leading causes of death are similar. For example, in Greenland in 2018, the leading causes were cancer (24%), heart and circulatory diseases (20%), and respiratory disease (9%) [30]. Likewise, in Alaska, USA, the leading causes of death in 2015 were as cancer, heart disease, and accidents [31]; a similar pattern was evident for Alaska Natives [32].

Canadian rates of hospital deaths, which have declined from 2003 to 2018, were similar to Newfoundland and Labrador’s provincial rates and higher than what we observed in Innu communities [7]. Patient preference or lack of access to hospital care may contribute to the lower rate of hospital deaths in Innu communities [9,10,24]. One study of six Alaska Indigenous communities similarly reported on the

importance of dying at home, especially in remote contexts where patients may have to travel long distances to reach a hospital [33].

Most deaths examined in this study were due to cancer or chronic diseases. Many patients who die due to these illnesses could benefit from palliative care [2,24]. Although these services are may be offered in hospital, this is often not aligned with patient or family preferences [3–5], and can result in higher health system costs [34]. Even though most patients prefer to die at home [3–5], we found that the proportion of hospital deaths in Innu and non-Innu communities in Newfoundland and Labrador were higher than in Canada overall. Consequently, there may be opportunities for strengthening and scaling up access to community-based palliative care services. In doing so, local health systems may be better able to address the medical and cultural needs of diverse populations [2]. This is particularly important among the Innu communities of Labrador [11], where the rates of mortality and home death are high.

Strengths and limitations

One strength of this study was the high degree of community engagement. This was possible because this study was nested in a broader project about the Innu approach to culturally safe end-of-life care. Innu community members held leadership and governance roles related to the project. This included the development of an Innu Advisory Committee, creating a research agreement, regular community visits by non-Innu researchers and ensuring Innu were involved in sharing the results of the study, including as co-authors [11]. Our study is further strengthened by the use of population-based mortality data from a 25-year period which captured all deaths occurring in the province.

There are also several limitations to our study. First, the mortality data did not include Indigenous identifiers as this information was not available in vital statistics data at the time of the study. Instead, we used a geographic approach similar to other studies [15,35]. A drawback of this approach is that non-Innu people who died in an Innu community were included in the Innu mortality data. As well, Innu people who lived in non-Innu communities when they died were also included in the comparison population rates.

A second limitation is that we did not directly examine palliative-eligible deaths. Instead, we investigated causes of death that are commonly received from palliative care, including both cancer and diseases related to chronic organ failure, such as heart failure, chronic obstructive pulmonary disease, kidney disease, and

stroke [24]. Our study, therefore, likely included some deaths that would not have been eligible for palliative care due to patients' goals of care and/or expected prognosis.

A third limitation was the small population size of Innu communities, resulting in relatively small numbers of deaths per year. Because privacy rules prevented the release of cell counts less than 5, we obtained mortality data that was pooled over two time periods, which may have obscured the true annual variation in mortality.

Implications for health system planning

This study has implications for health system sustainability. The expenses associated with end-of-life care are notably the highest among those receiving inpatient medical care [34]. A sustainable approach for the future may include the development, implementation, and evaluation of community-based palliative care options, such as integrated home palliative care teams that include access to home care and care homes [36,37]. For example, a community-based palliative care programme in an Alaska Native community helped increased the completion of advanced care directives and increased the proportion of at-home deaths due to cancer, COPD, renal disease, and congestive heart failure by 45% over a 5-year period [38].

There has been increased interest in Labrador in developing Innu-specific approaches to care [11], and several initiatives with alternative delivery models such as shared medical appointments for diabetic care have been shown to be feasible [39]. Community and home-based approaches to palliative care may be provide more opportunities for integrating diverse cultural practices and traditions into end-of-life care than hospital-based care. These approaches may better reflect patient preferences and be more cost effective for health systems.

Conclusion

From 1993 to 2018, the majority of deaths in Innu and non-Innu communities in Newfoundland and Labrador were due to cancer and chronic diseases. Such deaths can often benefit from palliative care services, which can often be appropriately delivered at home, where most patients prefer to die. Improving infrastructure and service delivery capacity for community-based end-of-life care in Innu communities in Labrador may have a positive impact on Innu experiences with palliative care and may support more sustainable health service delivery in a Circumpolar region.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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This project received funding from a Quick Start Fund for Public Engagement grant from the Office of Public Engagement at Memorial University to explore community interest in the project prior to commencement of the research. A grant from NL SUPPORT funded the research process and knowledge translation for this study.

Data availability statement

The vital statistics data used in the study are available from the Newfoundland and Labrador Centre for Health Information or Statistics Canada.

Ethics Approval

Ethics approval granting permission to conduct this research was received from the Innu Nation. The Sheshatshiu Innu First Nation Band Council also provided a letter of support for this study. All aspects of this study were performed in accordance with relevant guidelines and regulations. Ethics approval was also received from the Labrador-Grenfell Regional Health Authority and the Health Research Ethics Board (HREB) in Newfoundland and Labrador.

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Appendix

Deaths excluded from the analysis	ICD-9/ICD-10 Codes
Conditions Originating in the Perinatal Period and	E760-E779/P00-P96
Congenital malformations, deformations and chromosomal abnormalities	E740 to E759/Q00 to Q99
Intentional Injuries/Poisonings	E950-E959/X60-X84 and Y87.0
Unintentional Injuries/Poisonings	E800-E869 and E880-E949/V01-X59 and Y85-Y86
Event of Undetermined Intent	E960-E969 and E980-E989/X85-Y09, Y10-Y34, and Y87.1 and Y87.2
Complications of Childbirth, Pregnancy and the Puerperium	630–648 and 651–676/O00-O99