



report, the Truth and Reconciliation Commission of Canada made "Calls to action" to redress the legacy of residential schools [18]. Among those related to health, the TRC admonished federal, provincial and territorial levels of government to acknowledge the effects of Canadian government policies (e.g. residential schools) and, working together with Indigenous peoples, to identify and close the gaps between Indigenous and non-Indigenous communities in health outcomes [18]. Although there have been some empirical studies of the effects of residential schooling on Indigenous peoples health, there has been no previous attempt to synthesize the evidence of these effects. The purpose of this scoping review is therefore to describe the current state of the literature regarding residential school attendance and the health and well-being of Indigenous people in Canada. In particular we ask; what are the health outcomes that have been empirically linked to residential schooling, what are the populations in which these effects have been identified, and whether effects are found among Survivors or

librarian who specializes in First Nations studies. Broad search terms were used within these databases and are documented in Table 1.

The search results were downloaded into the reference management software Endnote (Endnote X7, Thomson Reuters, 2014), from which duplicates were removed. Inclusion was determined using the following criteria: (a) English-language source (or translated abstract), (b) analysis using primary or secondary data, (c) focus on an Indigenous population in Canada (e.g., First Nations, Inuit, Métis), and (d) focuses on residential school attendance and its relation to health. Grey literature addressing residential school attendance and health were also sought out to provide additional support, including government or organization reports, commentaries, or news bulletins.

Selecting the articles for inclusion was completed in two steps. In the first stage, two reviewers screened titles and abstracts and citations that did not meet the inclusion criteria were removed. If the reviewers were unsure about the relevancy of an abstract, the full text of the article was retrieved and reviewed. At the second stage, the full texts of the articles were reviewed for final inclusion. The bibliographies of the full articles were hand-searched to identify further relevant references. Systematic or scoping reviews were not included in this scoping review; however, their reference lists were reviewed for pertinent references. A detailed chart depicting the search results is provided (Fig. 1). Following Arksey and Malley's framework [19], a spreadsheet was created to chart the relevant data that is pertinent to the research question. The papers selected for inclusion were coded following similar categories used by Wilson and Young [22] and Young [23] in their reviews of Indigenous health research. The categories used includes: Indigenous identity group, geographic location, age-sex, residential school attendance, and health status. A description of each category is provided below. Data extraction was carried out by one of the researchers in an Excel database and was verified by another team member.

Classification categories

Studies were classified according to the health outcomes examined, the Indigenous population affected, the geographic location of the study, and the age and sex/gender categories included in the study, and the type of residential schooling effect investigated.

Health outcomes

Although we distinguish specific types of health outcomes resulting from personal experiences and the intergenerational impacts of residential schooling, it is important to acknowledge that these outcomes do not occur independently, but exist in complex relationships with other effects [24]. The consequences of residential schools are wide-

Table 1 Search terms

("residential school")

AND

(health OR wellness OR wellbeing OR "well-being" OR "well being" OR "Indigenous health")

AND

(Aborigin* OR Indigenous OR

reaching and, according to Stout and Peters [24], may include, medical and psychosomatic conditions, mental health issues

disability. In addition, for the purposes of this review, suicide and suicide attempts or thoughts were also classified with mental health.

(3) General health: A category related to general overall health was also included for papers that did not make references to a specific health outcome.

Indigenous identity group

Populations were also classified as either referring to a single Indigenous identity (First Nations, Métis, or Inuit) or a combination of identities (a combination of two single identity groups, or Indigenous and non-Indigenous identities).

Geographic location

For this review, we examined two aspects of geography. Firstly, we determined if the studies referred to Indigenous populations living on First Nations reserves, northern communities, non-reserve rural areas, or in urban areas. Secondly, we identified the province or territory of focus in the paper.

Age-sex/gender categories

The health outcomes associated with residential school attendance might be different for men and women, or boys and girls. Studies were categorized by the age range and sex/gender of the participants.

Residential school attendance

Residential school attendance was classified as either personal attendance or familial attendance (i.e. parents, grandparents, aunts, uncles).

Results

Characteristics of the included studies

As depicted in Fig. 1, 61 studies were found that discussed residential schools in Canada and the health effects among Survivors, their families, or communities. The details of each study included in the review were provided in a chart and can be found in Table 2. The majority of papers were published in 2000 and later, with the exception of one published in 1999. Their sample sizes ranged from 1 to 51,080 and involved children, youth, and adults. Often, studies included men and women, various Indigenous identities, several geographic locations, and personal and familial residential school attendance.

Indigenous identity group

The majority of studies, 43, included First Nations. Eighteen studies involved Inuit and 17 included Métis. In 11, the population was identified as “Aboriginal” or “Indigenous” and did not distinguish between First Nations, Inuit, or Métis. Three studies also included “Other” Indigenous populations that were not further defined, two included multiple identities, one undisclosed identity, and two included non-Canadian Indigenous populations (Sami, American Indian).

Geographic location

A total of 14 studies were conducted using national level Canadian data. Seven studies focused on Atlantic Canada; two were conducted in Newfoundland, one in Nova Scotia, one in New Brunswick, and two in the Atlantic region. Six studies were conducted in Quebec, ten studies took place in Ontario, and one in Central Canada. In Western Canada, eight studies took place in Manitoba, eight in Saskatchewan, ten in Alberta, 13

Table 2 Summary of studies included in review

Author and publication year	Sample size	Indigenous group	Geographic location	Age-sex	Residential school attendance	Health status	Health related to residential school
T Anderson ³⁹	N = 2571	Inuit	NL, QC, NU, NT Off-reserve Northern	18+ years M/F	Personal Familial	Mental health/ emotional well- being	Personal and familial residential school attendance only significantly related to men's mental distress
T Anderson and A Thompson ⁴⁸	N = 2925	Inuit	NL, QC, NU, NT Off-reserve Northern	15-54 years M/F	Personal Familial	General health	Personal and familial residential school attendance not significantly associated with self-reported excellent or very good health
SS Barton, HV Thommasen, B Tallio, W Zhang and AC Michalos ⁴⁹	N = 201	First Nations	BC Rural	M age = 63.5 (attended RS); M age = 61.2 (non- attende) M = 93; F = 108	Personal	General health	Residential school attendees reported lower self-health scores compared to non-attendees

A Bombay, K Matheson
and H Anisman⁵⁰

Table 2 Summary of studies included in review (continued)

B Elias, J Mignone, M Hall, SP Hong, L Hart and J Sareer [1]	N = 2953	First Nations	MB On-reserve	18+ years M/F	Personal Familial	Mental health/ emotional well-being	Attendees with abuse history likely to have history of suicide thoughts or attempts. Abuse history for non-attendees more likely for those with multi-generational residential school exposure
D Feir [2]	N = 4939	First Nations, Inuit, Métis	ON, MB, SK, AB, BC On/off-reserve Rural/urban	7–15 years M/F	Familial	General health	Children who had a mother that attended residential school fared better on numerous health dimensions than children whose mother did not attend
IM Findlay, J Garcea and JG Hanser [3]	N = 105	First Nations, Métis, non-status Aboriginal, other	SK Urban	18–64 years M = 32, F = 72, Other = 1	Personal Familial	General health	In part because residential school, as few as 6–11% reported physical, mental, emotional, and spiritual well-being as excellent
First Nations Regional Longitudinal Health Survey (RHS) [4]	N = 22,602	First Nations	Canada-wide (excl. NU) On-reserve	0–11 years (C) 12–17 years (Y) 18+ years (A) M/F	Personal	Mental health/ emotional well-being Physical health	(C) No effects of familial residential school history (Y) Youth who had at least one parent attend residential school were more likely to have thought about suicide (A) Increased susceptibility to mental and physical health effects resulting from attendance at residential school
First Nations Information Governance Centre (FNIGC) [5]	N = 21,757	First Nations	Canada-wide On-reserve	0–11 years (C) 12–17 years (Y) 18+ years (A) M/F	Personal Familial	Physical health Mental health/ emotional well-being General health	(C) Emotional or behavioural problems not associated with familial residential school history (Y) Intergenerational impacts of residential school related to depressive symptoms (A) Attendees more likely to be diagnosed with at least

Table 2 Summary of studies included in review (continued)

H Ghosh ³⁰	N = 20	First Nations	ON Off-reserve Urban	21-77 years M = 3, F = 17	Personal	Physical health	one chronic condition, smoking (maternal), and report poorer overall health and well-being Consumption of a higher concentration of carbohydrates at residential school partly indicative of higher incidences of diabetes among First Nations people.
JP Gone ³¹	N = 1	First Nations	MB On-reserve	50s F	Personal	Mental health/ emotional well-being	Traumatic stressors caused by residential school related to historical trauma. Enduring problems through adulthood, (e.g., alcoholism, religious alienation, and troubled relationships)
C Hackett, D Feeny and E Tompa ³²	N = 14,280	First Nations, Inuit, Métis	Canada-wide Off-reserve Rural/urban/ Northern	18+ years M, F	Familial	General health/ Mental health/ emotional well-being	Familial residential school attendance was associated with lower self-perceived health and mental health and higher risk for distress, suicidal ideation and suicide attempt
GK Healey ³³	N = 20	Inuit	NU Northern	Parents of youth 13 19 years M = 3, F = 17	Personal Familial	Physical health	Parents discussed sexual health in the context of historical community events related to settlement and/or residential school
G Healey ³⁴	N = 20	Inuit	NU Northern	30-58 years M = 3, F = 17	Personal Familial	reside(unity)-29cat96(and)-3i(and)-3gence reside02(suic)5(pec-14if302(ice)() T	

Table 2 Summary of studies included in review (continued)

V Kaspas[27]	N= 13,881	First Nations, Inuit, Métis, Other/multiple identity	Canada-wide Off-reserve Rural/urban/Northern	34+ years M = 6246, F = 7635	Personal	General health	Residential school attendance predicted negative health status both directly and indirectly through socioeconomic and community risk factors	their health (e.g., language and cultural loss, fractured identity, and negative self-worth resulting in feelings of anger, stress, depression, and low-self-esteem)
MJ Krahl[3]	N= 27	Inuit	NU Northern	17-61 years M = 16, F = 11	Familial	Mental health/emotional well-being	Romantic, family, and intergenerational relations described with suicidality in the context of colonial change. Negative effect of the colonial wound appears to have been on family relations, a serious form of cultural discontinuity	
MB Kumar[4]	N= 10,306	First Nations, Inuit, Métis	Canada-wide Off-reserve Rural/urban Northern	26-59 years M/F	Personal Familial	Mental health/emotional well-being	First Nations women, Métis men, and Métis women with personal or familial residential school history more likely than those without history to have had suicidal thoughts	
MB Kumar and A Nahwegahbow[5]	N= 4686 (APS) N= 3020 (CCHS MH)	First Nations, Inuit, Métis	Canada-wide Off-reserve Rural/urban/Northern	18-25 years	Personal Familial	Mental health/emotional well-being	Personal or familial residential school experience was marginally associated with suicidal thoughts among off-reserve First Nations young adults.	
MB Kumar, M Walls, T Janz, P Hutchinson, T Turner and C Graham[6]	N= 11,362	Métis	QC, ON, SK, AB, NU Off-reserve Rural/urban/Northern	20-59 years M/F	N/A	Mental health/emotional well-being	History of residential school experience not significantly associated with suicidal ideation	
	N= 603	N/A	SK	N/A	N/A			

Table 2 Summary of studies included in review (Continued)

M Lemstra, M Rogers, A Thompson, J Moraros and R Buckingham	N = 603	First Nations, Inuit, Métis	SK Off-reserve Urban	18-69 years M = 277, F = 253	Personal Familial	Mental health/ emotional well- being	Attending a residential school was independently associated with depressive symptomatology
M Lemstra, M Rogers, A Thompson, J Moraros and R Buckingham						Mental health/ emotional well- being	Comparing to non-Indigenous IDUs, study found that Indigenous IDUs were more likely to be female and younger, less likely to receive paid income and were more

Table 2 Summary of studies included in review (Continued)

J Reading and B Elias [

and drug use occurred
within communities.

Table 2 Summary of studies included in review (Continued)

	On-reserve		Mental health/ emotional well- being	problem with deep historical and contemporary structural roots			
ML Walls and LB Whitbeck [8]	N = 853	First Nations; American Indian	Canada-wide, USA On-reserve	Mean age = 39.3 M, F (~72%)	Personal	Mental health/ emotional well- being	Bivariate results show that culturally relevant early lifetime (residential school) and adulthood (perceived historical loss) stressors are negatively associated with mental health among adults
D Wardman and D Quantz [2]	N = 15	Aboriginal	AB, BC Rural/urban	20-60 years M = 2, F = 13	N/A	Mental health/ emotional well- being	Participants related their binge drinking to a broader perception of shame and cultural loss, for some this began in residential schools
K Wilson, MW Rosenberg and S Abonyi [6]	N = 51,080	First Nations, Inuit, Métis	Canada-wide On/off-reserve Rural/urban/ Northern	18+ years M, F	Personal	General health	Residential school attendees reported worse health status than the population who did not attend residential school

in British Columbia, one in the prairies, and three in Western Canada. Additionally, a few studies were conducted in the territories, with two taking place in the Northwest Territories, and six in Nunavut. Two studies did not specify a geographic location and two were conducted in the USA.

Twenty-four studies considered Indigenous peoples living on-reserve, while 23 in-

arthritis, allergies, and sexually transmitted infections (STIs). In a study by Ghosh [30], participants stated that their experiences at residential school impacted their diets through the higher consumption of carbohydrates, a factor the authors relate to the higher rates of diabetes among this population today. Howard [31] found similar results and suggested that residential schooling contributed to the urbanization of Indigenous peoples in Canada, which has led to diabetes and other problems. Dyck and colleagues also reported that those who attended residential school had a slightly higher prevalence of diabetes than those who did not, although the finding was not statistically significant [32]. Residential school attendance has also been found to be a positive predictor of obesity among younger Métis boys and girls, but a negative predictor among older girls [33]. In addition to chronic conditions, residential school attendance has been associated with poorer sexual health in general [34, 35], infectious diseases such as HIV/AIDS and STIs [36] and has been identified as an independent risk factor for HCV [37]. Corrado and Cohen found that many First Nations people who had personally attended residential schools reported suffering from physical ailments including, chronic headaches, heart problems, and arthritis [5].

Survey who had at least one parent who attended residential school reported increased suicidal thoughts compared to those without a parent that attended [42].

Discussion

This review aimed to summarize the current literature on residential schools and Indigenous health and well-being using Arksey and Malley's scoping review framework [19]. In general, the empirical literature further documented the wide ranging negative effects of residential schools that had previously been identified by Survivors themselves [15] and confirmed that residential schooling is likely an important contributor to the current health conditions of Indigenous populations in Canada. The studies included revealed a range of poorer physical, mental and emotional, and general health outcomes in both residential school attendees and their families compared with those without these experiences. This included evidence of poorer general health, higher risk of chronic conditions such as diabetes, as well as infectious diseases such as STIs. Many of the studies related residential schooling to poorer mental health, including de-

important to acknowledge its limitations, however. Firstly, while a scoping review provides a rapid summary of a range of literature, it does not include an appraisal of the quality of the studies included nor provide a synthesis of the data. Secondly, the inclusion of studies is determined by the reviewer's interpretation of the literature and therefore may be more subjective in nature.

Implications

The lasting effects of residential schooling on the current Indigenous population are complicated and stretch through time and across generations. It is clear, though, that our understanding of the factors that affect Indigenous people's health should include both the effects of

Abbreviations

HCVHepatitis C virus; IDU: Injection drug user; PTSD: Post traumatic stress disorder; STIs: Sexually transmitted infections; TB: Tuberculosis

Acknowledgements

The authors would like to acknowledge the assistance of Courtney Waugh, who reviewed our search strategy and recommended valuable databases to use in our scoping review. Additionally, the authors would also like to

17. Archibald L. Decolonization and Healing: Indigenous Experiences in the United States. Ottawa: Australia and Greenland; 2006.
18. Truth and Reconciliation Commission of Canada. Truth and Reconciliation Commission of Canada: Calls to Action. Winnipeg: Truth and Reconciliation Commission of Canada; 2015.
19. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol*. 2005;8(1):19-32.
20. Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci*. 2010;5(1):69.
21. Armstrong R, Hall BJ, Doyle J, Waters E. Scoping the scope: a scoping review. *J Public Health*. 2011;33(5):417-427.
22. Wilson K, Young TK. An overview of aboriginal health research in the social sciences: current trends and future directions. *Int J Circumpolar Health*. 2008;67(2-3):179-192.
23. Young TK. Review of research on aboriginal populations in Canada: relevance to their health needs. *Br Med J*. 2003;327(7412):422.
24. Stout R, Peters S. *kiskinohamâtôtâpânâsk: Inter-generational Effects on Professional First Nations Women Whose Mothers are Residential School Survivors*. Winnipeg, MB: The Prairies Women's Centre of Excellence; 2011.
25. First Nations Information Governance Centre (FNIGC): First Nations Regional Health Survey (RHS) 2008/10: National report on adults, youth and children living in First Nations communities. Ottawa, ON: FNIGC; 2012.
26. Wilson K, Rosenberg MW, Abonyi S. Aboriginal peoples, health and healing approaches: the effects of age and place on health. *Soc Sci Med*. 2011;72(3):335-345.
27. Kaspar V. The lifetime effect of residential school attendance on Indigenous health status. *Am J Public Health*. 2014;104(11):2130-2134.

52. Chongo M, Lavoie JG, Hoffman R, Shubair M. An investigation of the determinants of adherence to highly active anti-retroviral therapy (HAART) in aboriginal men in the Downtown Eastside (DTES) of Vancouver. *Can J Aborig Community-Based HIV/AIDS Res.* 2014;6:32
53. DeBoer T, Distasio J, Isaak CA, Roos LE, Bolton S-L, Medved M, Katz LY, Goering P, Bruce L, Sareen J. What are the predictors of volatile substance use in an urban community of adults who are homeless? *Can J Commun Ment Health.* 2015;34(2):37.
54. Dionne D, Nixon G. Moving beyond residential school trauma abuse: a phenomenological hermeneutic analysis. *Int J Ment Heal Addict.* 2014;12(3):305
55. Findlay IM, Garcea J, Hansen JG. Comparing the Lived Experience of Urban Aboriginal Peoples with Canadian Rights to Quality of Life. Ottawa: Urban Aboriginal Knowledge Network; 2014.
56. Gone JP. Redressing First Nations historical trauma: theorizing mechanisms for Indigenous culture as mental health treatment. *Transcult Psychiatry.* 2013;50(5):683
57. Iwasaki Y, Bartlett JG. Culturally meaningful leisure as a way of coping with stress among aboriginal individuals with diabetes. *J Leis Res.* 2006;38(3):321.
58. Iwasaki Y, Bartlett J. Stress-coping among aboriginal individuals with diabetes in an urban Canadian city. *J Aborig Health.* 2006;3:11.
59. Iwasaki Y, Bartlett J, et al. J. An examination of stress among aboriginal women and men with diabetes in Manitoba. *Canada Ethn Health.* 2004;9(2):129
60. Jackson R, Cain R, Prentice T. Depression among Aboriginal People Living with HIV/AIDS: Research Report. Ottawa: Canadian Aboriginal AIDS Network; 2008.
61. Jones L. *Killing the Indian, Saving the Man: The Long-run Cultural, Health, and Social Effects of Canadian Residential Schools.* Ithaca: Cornell University; 2014.
62. Juutilainen SA, Miller R, Heikkilä L, Rautio A. Structural racism and Indigenous health: what Indigenous perspectives of residential school and boarding school tell us? A case study of Canada and Finland. *International Indigenous Policy Journal.* 2014;5(3):1