The Lifetime Effect of Residential School Attendance on Indigenous Health Status

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The prevalence of poor general health in the Canadian population continues to be substantially higher among Aboriginal peoples than non-Aboriginal peoples.[1-3] The disparity and greater burden of illness in the Indigenous population have been attributed in part to the enduring effects of colonization that destabilized Aboriginal cultural, economic, and community systems.[3] Establishment of the Indian residential school (IRS) system and enforcement of compulsory enrollment for school-aged Aboriginal children constituted some of the most assertive means by which the Canadian government administered colonial policies. There are potential health risks associated with IRS attendance[3-5]; however, these effects, and factors explaining health outcomes were not assessed systematically in previous research. The etiology of negative health status among residential school attenders has been obscured partly because of the failure to expand the scope of Indigenous health determinants in empirical analysis to consider simultaneously the influences of early colonization-specific experiences and more proximal socioeconomic disadvantages and adverse psychosocial and community conditions.

I examined the effect of lifetime residential school attendance on self-reported health status and the extent to which socioeconomic and community adversities were pathways linking IRS attendance histories to health outcomes in Inuit, Métis, and off-reserve First Nations or North American Indian adults surveyed across Canada for the 2006 Aboriginal Peoples Survey. Self-assessed general health is a strong predictor of morbidity independent of sociodemographic factors, is highly correlated with physician-assessed health status, predicts health care system spending,[6,7] and is a culturally relevant, valid indicator of health in Indigenous populations.[8] By using national data inclusive of multiple Indigenous groups, and comprehensive analytic procedures to test models incorporating an array of risk factors disproportionately affecting the Indigenous

Objectives. I examined the health impact of lifetime Indian Residential school (IRS) attendance and the mediating influences of socioeconomic status and community adversity on health outcomes in a national sample of Aboriginal peoples in Canada.

Methods. In an analysis of data on 13 881 Inuit, Métis, and off-reserve First Nations or North American Indian adults responding to the postcensus 2006 Aboriginal Peoples Survey administered October 2006 to March 2007, I tested the direct effect of IRS attendance on health and indirect effects through socioeconomic and community factors using logistic regression procedures.

Results. Negative health status was significantly more likely with IRS attendance than nonattendance. The direct effect of IRS attendance remained significant although it attenuated substantially when adjusting for demographic characteristics, socioeconomic status, and community-level adversities. Community adversity and socioeconomic factors, primarily income, employment status, and educational attainment mediated the effect of IRS on health.

Conclusions. Residential school attendance is a significant health determinant in the Indigenous population and is adversely associated with subsequent health status both directly and through the effects of attendance on socioeconomic and community-level risks. (*Am J Public Health.* 2014;104:2184–2190. doi:10.2105/AJPH.2013.301479)

population, I was able to address some limitations of previous research on Indigenous health attributable to limited use of multivariate analysis for determining mechanisms mediating the impact of colonization-related experiences on health, lack of national data derived from culturally relevant indicators of health and measures in common across Aboriginal groups, and nonrepresentativeness owing to insufficient inclusion of urban and off-reserve populations and Indigenous peoples residing in isolated geographic areas.

The results are relevant to locating critical points of intervention for reducing population health disparities and the greater burden of illness in vulnerable groups undergoing rapid population growth. As of the 2011 enumeration of the population, more than 1.4 million persons, or 4.3% of the population of Canada, were Aboriginal people reporting North American Indian (First Nations), Métis, Inuit, or other Aboriginal identities.[9] Approximately three quarters, including status and nonstatus Indians and the Métis and Inuit, resided off reserve. By

year 2031, the Aboriginal population is projected to increase to 1.7 to 2.2 million.[10]

THE RESIDENTIAL SCHOOL SYSTEM IN CANADA

With the establishment of government-sponsored residential or industrial schools, federal policy directed at the assimilation of Aboriginal peoples in Canada was instituted through the formal education system.[3,11] Aboriginal children placed in residential schools, often located far from their communities and parental influences, were prohibited from speaking any Aboriginal language, expressing cultural and spiritual beliefs, and practicing traditional rituals.[12] Relative to other schools across the country, residential schools were severely underfunded; also, unqualified personnel typically oversaw teaching and administration functions, and classroom instruction time was substantially lower at residential schools.[11,13] Students were not being prepared for higher education but, rather, receiving

mostly religious instruction and vocational training for employment in industrial or manual labor work sectors. Impoverished physical environments and inhumane treatment of students caused additional, often life-threatening risks through nonprovision of medical treatment of student illnesses and injuries, malnourishment, substandard and unsanitary school and accommodation conditions, overcrowding, use of student labor to maintain school operations, severe student disciplinary practices, corporal punishment, verbal and physical abuse, mental cruelty, and sexual violence.[14–17] The majority of residential school attenders did not progress beyond the ninth grade and never returned to school or recovered in terms of economic and occupational attainments, successful community reintegration, and health.[4,11]

RESIDENTIAL SCHOOL ATTENDANCE AND INDIGENOUS HEALTH

Negative self-ratings of overall health are significantly higher among residential school attenders than among Aboriginal adults never attending an IRS in Canada.[18,19] In the First Nations Regional Longitudinal Health Survey (2002/03 Adult Survey), 47% of respondents who attended residential schools cited attendance as an adverse influence on their general health and well-being.[18] More than two thirds of First Nations responding to a public opinion poll conducted by the National Aboriginal Health Organization cited the IRS system as a contributing factor to the current health problems of Aboriginal peoples in Canada.[20] From the limited empirical results of previous studies restricted to descriptive and univariate statistics and study populations composed exclusively of First Nations, it is not possible to determine the factors that explain health outcomes and whether the findings can be generalized to other Aboriginal groups. More systematic research on the health impact of IRS attendance will involve identifying mechanisms mediating the effect across multiple Aboriginal groups with distinctive histories and life circumstances contributing to differential access to determinants of health.

Aboriginal peoples are affected by excessive socioeconomic and community disadvantages that may underlie the effect of IRS attendance on health. Residential school attendance is associated with subsequent low income and educational attainment, erratic employment histories, and poor housing conditions[4]; however, it remains to be demonstrated whether socioeconomic factors explain health outcomes of residential school attendance. The delineation of the health impact of IRS attendance is impeded further by failure to assess the effects of Indigenous community conditions in addition to socioeconomic factors predominant in research developed on the basis of conventional health determinants models. Relative to the non-Indigenous population, Aboriginals are disproportionately affected by high levels of risk conditions occurring at the community level, such as poverty, family dysfunction, unemployment, drug and alcohol abuse, violence, sexual abuse, and suicide.[3] An established literature is derived from evidence that disparities in psychosocial and economic adversities exist spatially and predict health outcomes, even after controlling for the effects of individual socioeconomic and demographic factors.[21,22] The influences of community-level risk factors remain virtually unexamined in Aboriginal health research, including research on the effect of IRS attendance on health.

METHODS

The data source was the Public Use Micro File for the postcensus 2006 Aboriginal Peoples Survey: Adult Core—a cross-sectional national survey of the Aboriginal population aged 15 years and older residing off reserve in the Canadian provinces and territories.[23] The response rate of the survey, conducted October 2006 to March 2007, was 81.1%. Respondent eligibility was determined on the basis of census data confirming Aboriginal identity or ancestry, registered Indian status, or membership in an Indian band or First Nation. Survey forms, available in English, 5 Inuit and 3 Cree dialects, Ojibwe, Dene, and Mi'kmaq were composed of questions to assess demographic and socioeconomic factors, housing and community conditions, and health. Administration was by telephone and by in-person interview only for respondents residing in remote areas and when it was not possible to reach potential respondents by telephone because the sample file contained no telephone number or individuals could not be contacted at the number specified.

Data on 24 368 survey respondents were contained in the Public Use Micro File. Criteria for exclusion from the analysis sample were being younger than 35 years (10 446 cases), because only those older than 34 years were likely to have attended an IRS, and missing data on the health outcome variable (41 of the 13 922 respondents retained after exclusion on the basis of age). The final analysis file contained 13 881 cases (45% male; 55% female). Approximately 69% of respondents were aged 35 to 54 years, whereas 31% were aged 55 years or older. Set specifications in the Public Use Micro File required restricting age categories for individuals aged 35 years and older accordingly to 3 age ranges: 35 to 44 years, 45 to 54 years, and 55 years and older. The sample comprised 52% First Nations, 22% Métis, 3% Inuit, and 23% individuals with other or multiple Aboriginal identities. More than one quarter (27%) had treaty or registered Indian status per criteria outlined in the Indian Act of Canada. Ten percent of respondents (n = 1347) reported attendance at a federal residential or industrial school.

Measures

Self-assessed general health status was the outcome variable derived from a single question: "In general, would you say your health is . . . excellent, very good, good, fair, or poor?" Respondents rated their health status on a 5-point scale ranging from 1 to 5, with a higher score indicating better self-perceived health.

Indian residential school attendance was the primary independent variable, self-reported as ever attending an IRS. Respondents either affirmed or disaffirmed their lifetime IRS attendance in response to the survey item "Were you ever a student at a federal residential school or a federal industrial school?"

Multivariate models included 3 sets of covariates: demographic, socioeconomic, and community adversity variables. Confounders were gender, age, Aboriginal group, and treaty or registered Indian status, and mediators were marital status, family status, education, income, employment, and community adversity. Demographic variables included gender (female = 1, male = 0), age, family status, geographic residence, Aboriginal group, and Indian status. For age, coded as 2 dummy variables (35 to 44 years and 45 to 54 years), the common reference group was aged 55 years and older.

The common reference group for family status, coded as 2 dummy variables (married or common-law married and lone parents), was individuals not married and not living in a nuclear family. I coded geographic residence as census metropolitan areas (CMA = 1) versus other geographic regions (CMA = 0). Aboriginal groups were Inuit, Métis, North American Indian (First Nations), and a combined group with multiple and other Aboriginal ancestries; the other or multiple group was the common reference. I coded status 1 if respondents had treaty or registered Indian status as defined by the Indian Act, and 0 otherwise.

Socioeconomic status (SES) variables included education, income, employment, and condition of residential dwelling. Four education categories reflected the highest level of education attained: university degree, some postsecondary education, high school graduation, and less than high school. Income, coded as 6 categories ranging from less than $10 000 to $40 000 or more, referred to total income in Canadian dollars from all sources during the calendar year before the survey. Respondents indicated their employment status by responding (yes or no) to a question about whether they were working for pay or self-employed during the week before the survey. The coding of residential dwelling condition was dichotomous, with 1 indicating that the dwelling required major repairs and 0 indicating requirements of only minor repairs or regular maintenance.

I assessed community adversity as the presence of any of 6 adverse neighborhood or community conditions affecting Aboriginal peoples, encompassing problems of suicide, alcohol abuse, drug abuse, sexual abuse, family violence, and unemployment. Respondents provided dichotomous ratings of each adversity listed in the questionnaire item "Are any of the following a problem for Aboriginal people in the community or neighborhood where you are living now?" Scores ranged from 0 to 6, with high scores corresponding to greater community adversity.

Data Analysis

Comparing individuals who attended with those who did not attend a residential school, I tested group differences in health status and demographic, socioeconomic, and community variables using descriptive statistics,

specifically, the t test for continuous variables and the χ^2 test for categorical variables. I used multivariate procedures to examine the direct effect of IRS attendance on health and indirect effects through socioeconomic and community factors. Self-reported health was coded as a 5-level ordinal outcome thereby requiring the use of ordered logit models to estimate the cumulative distribution probabilities of the response categories. I constructed 3 ordered logistic regression models to test sequentially the influences of demographic and socioeconomic factors and community adversity in explaining the IRS attendance effect on health. For each model, I have presented the odds ratios (ORs; the antilog of the ordered logistic parameter estimates) of independent variables. A ratio that is smaller than 1 indicates that a variable is associated with poor health. Conversely, a ratio larger than 1 indicates association with better health. I included the indicator of IRS attendance in the first model then added demographic and SES variables in model 2 and the community adversity variable in model 3. I conducted a decomposition analysis to assess the degree to which each of the variables included in model 3 contributed to the explained portion of the effect.

For this analysis procedure applied in nonlinear regression,[24,25] I calculated the relative contribution of a variable X_i as $\beta_i \times (X_{i1} - X_{i2}) / \Sigma(\beta \times (X_1 - X_2))$, where β_i represents the coefficient of the independent variable X, and X_{i1} and X_{i2} represent the means of that variable, respectively, for the IRS attending group and the never attending group. Assumptions of the decomposition analysis were that unmeasured variables would not confound the estimated association between IRS attendance and self-reported health, the associations between mediators and health, and the associations between IRS attendance and mediating variables.[26] I also verified that there were no significant interaction effects of IRS attendance and the included mediating variables. I did not derive the effect decomposition from ORs but rather from the predicted distribution of self-reported health. Thus, problems inherent in interpreting ORs were not applicable here.

RESULTS

Variable means or proportion distributions by attendance at residential school are

shown in Table 1. Individuals who attended an IRS reported lower levels of favorable health status than did nonattenders. Nearly 12% of respondents who attended residential schools reported excellent health, whereas 19% of those who never attended an IRS rated their health as excellent. Conversely, about 12% of individuals who attended an IRS reported poor health compared with 7% of nonattenders reporting poor health.

Residential school attendance was associated significantly with demographic characteristics. More female than male respondents attended an IRS. Individuals attending were more concentrated in older age groups, reflecting the fact that residential schools in Canada closed gradually until the last school closing by 1996. Individuals were less likely to be married or cohabitating and more likely to be lone parents if they attended an IRS. They also were less likely to live in a metropolitan area. Compared with respondents who never attended an IRS, those who attended were more likely to hold treaty or registered Indian status and to belong to either First Nations or Inuit ancestral groups, but they were less likely to have either Métis or multiple ancestries.

Respondents who attended residential schools were more likely to live in communities facing multiple social, health, and economic problems. Also, they were significantly disadvantaged socioeconomically. Although only 9% of individuals who attended an IRS obtained a university degree, about 14% of the nonattending group reached this educational level. More than 38% of the IRS attending group did not complete secondary school, whereas 25% of the nonattending group did not graduate from high school. Individuals who attended an IRS also tended to have low incomes; about 54% had annual incomes less than $20 000, which was about 16 percentage points higher than the share among those who did not attend an IRS. Only about one half of respondents who attended an IRS were employed at the time of the survey, whereas 63% of nonattenders were employed. About 1 of 5 respondents who attended an IRS lived in dwellings requiring major repairs; the corresponding level was 13% among individuals who never attended.

TABLE 1—Variable Means or Proportion Distributions by Attendance at Residential School: Aboriginal Peoples Survey: Adult Core, Canada, 2006

Variable	Attended IRS (n = 1357), Mean or Proportion	Did Not Attend IRS (n = 12 524), Mean or Proportion	P
General health			≤ .001
Poor	0.121	0.074	
Fair	0.219	0.136	
Good	0.307	0.276	
Very good	0.237	0.327	
Excellent	0.116	0.187	
Female	0.621	0.551	≤ .001
Age, y			≤ .001
35–44	0.215	0.379	
45–54	0.337	0.326	
≥ 55	0.448	0.295	
Married or common-law married	0.512	0.643	≤ .001
Lone parent	0.153	0.104	≤ .001
CMA	0.399	0.513	≤ .001
Aboriginal group			≤ .001
North American Indian	0.639	0.514	
Métis	0.082	0.225	
Inuit	0.106	0.023	
Multiple ancestries	0.172	0.238	
Treaty or registered status	0.692	0.241	≤ .001
Education			≤ .001
University degree	0.091	0.143	
Some postsecondary education	0.400	0.458	
High school graduation	0.127	0.150	
No high school graduation	0.382	0.249	
Income, Can$			.006
< 10 000	0.267	0.179	
10 000–19 999	0.273	0.208	
20 000–29 999	0.113	0.146	
30 000–39 999	0.114	0.133	
≥ 40 000	0.206	0.314	
Income missing	0.026	0.020	
Employed	0.505	0.630	≤ .001
Dwelling requires major repairs	0.199	0.129	≤ .001
Community adversity	3.729	2.711	≤ .001

Note. CMA = census metropolitan area; IRS = Indian residential school. The reference group for CMA is other urban or rural.

In results of logistic regression analyses, which are reported in Table 2, model 1 replicates the bivariate level effects. The effect in model 1 was statistically significant. The odds of reporting better health was 0.530 times lower among respondents reporting IRS attendance than among those who reported never attending. In model 2, the odds increased from 0.531 to 0.748, indicating that the negative health effect of IRS attendance became smaller when group differences in demographic and SES variables were controlled. Thus, differences in demographic and socioeconomic factors accounted for part of the IRS attendance effect. Of the demographic variables, gender, age, marital status, and ancestry were significant predictors of health. Women tended to report better health than did men.

Individuals aged 35 to 44 years reported better health than did those aged 55 years and older. Married or common-law married status was associated with better health. Respondents with North American Indian or Inuit ancestries reported better health than did others with multiple ancestries.

Four socioeconomic variables, education, income, employment status, and housing conditions, were strong predictors of general health. Individuals with university degrees had odds of reporting better health 2.74 times higher than the odds among individuals with less than high school education. The odds of reporting better health among individuals earning less than $10 000 annually was about half of that observed among individuals in the top income category. Employed individuals had odds of reporting better health that was 2.28 times higher than was that of individuals who did not report being employed. Relative to individuals with better housing conditions, respondents residing in dwellings requiring major repairs had an odds of reporting better health that was 0.53 times lower.

In model 3, the OR associated with IRS attendance increased further toward 1, suggesting that community adversity also accounted for part of the effect of IRS attendance on health. The effect remained statistically significant, although much reduced after controlling for selected covariates. This pattern of results indicates that IRS attendance affects health both directly and indirectly through its association with other predictors of health. Community adversity was a strong predictor of higher levels of poor health.

As a more direct illustration of the mediating influences of demographic, socioeconomic, and community characteristics, results are presented in Table 3 to show the distribution of health status by IRS attendance on the basis of estimates from models 1 to 3 in Table 2. The distribution estimated from model 1 replicates the overall group difference in health between individuals who attended and those who did not attend an IRS. The distribution derived from model 2 shows the remaining difference in health status when demographic and socioeconomic characteristics are controlled. Likewise, the distribution derived from model 3 shows the difference in health when

TABLE 2—Ordered Results of Multivariate Analysis Models Predicting General Health: Aboriginal Peoples Survey, Canada, 2006

	Model 1, OR (95% CI)	Model 2, OR (95% CI)	Model 3, OR (95% CI)
Attended residential school	0.531*** (0.470, 0.599)	0.748*** (0.658, 0.851)	0.779*** (0.685, 0.886)
Female		1.158*** (1.087, 1.235)	1.152*** (1.081, 1.228)
Age, y			
35–44		1.479*** (1.366, 1.603)	1.496*** (1.381, 1.621)
45–54		1.074 (0.991, 1.164)	1.096* (1.011, 1.188)
Married or common-law married		1.323*** (1.231, 1.422)	1.317* (1.225, 1.416)
Lone parent		0.915 (0.818, 1.024)	0.927 (0.829, 1.037)
CMA		0.987 (0.927, 1.050)	0.970 (0.911, 1.032)
Aboriginal group			
North American Indian		1.088* (1.009, 1.174)	1.063 (0.985, 1.147)
Métis		1.053 (0.962, 1.153)	1.046 (0.956, 1.145)
Inuit		1.275* (1.050, 1.547)	1.308** (1.077, 1.589)
Treaty or registered status		0.950 (0.883, 1.021)	0.974 (0.905, 1.047)
Education			
University degree		2.736*** (2.454, 3.051)	2.896*** (2.594, 3.232)
Some postsecondary		1.528*** (1.413, 1.653)	1.580*** (1.460, 1.710)
High school graduation		1.482*** (1.340, 1.639)	1.499*** (1.355, 1.658)
Income, Can$			
< 10 000		0.507*** (0.459, 0.560)	0.507*** (0.459, 0.559)
10 000–19 999		0.510*** (0.464, 0.561)	0.507*** (0.461, 0.557)
20 000–29 999		0.838*** (0.758, 0.926)	0.832*** (0.752, 0.919)
30 000–39 999		0.816*** (0.738, 0.903)	0.807*** (0.730, 0.892)
Income missing		0.937 (0.750, 1.170)	0.918 (0.735, 1.147)
Employed		2.275*** (2.114, 2.449)	2.286*** (2.124, 2.461)
Dwelling requires major repairs		0.712*** (0.651, 0.778)	0.723*** (0.661, 0.790)
Community adversity			0.955*** (0.944, 0.967)
Pseudo-R^2	0.003	0.064	0.066
Sample size	13 881	13 881	13 881

Note. CI = confidence interval; CMA = census metropolitan area; OR = odds ratio. The reference group for age is aged 55 years and older, for education is less than high school graduation, for income is > $40 000, for CMA is other urban or rural.
*P < .05; **P < .01; ***P < .001.

community adversity is further controlled. It is clear that the distribution of health status by IRS attendance becomes more similar from model 1 to model 3.

An index of dissimilarity calculated as one half the sum of the absolute difference at each level of health status by IRS attendance reflected changes in the difference in this distribution. This index is interpreted as the proportion of a group's members that would be required to change their health level to achieve the same distribution as the comparison group.[27] For instance, the number 0.161 for model 1 indicates that about 16% of the individuals who attended an IRS would have to

change their health level for the 2 groups to have the same distribution. The changes in the dissimilarity index across models suggest that about two thirds of the observed IRS attendance effect ((0.161 − 0.053)/0.161 = 0.67) can be accounted for by the selected covariates. The mediating effect of SES is about twice as large as is the direct effect of IRS attendance on health.

In results of the decomposition analysis, 3 SES variables, education, income, and employment status, contributed relatively more than did other variables to the explained portion of the health effect of residential school attendance. Each of these variables contributed

20% to 24% to the change in the effect of IRS attendance from model 1 to model 3. Community adversity contributed approximately 11% to this change, and age structure contributed another 15%. These socioeconomic and community factors had important mediating effects as they were strong predictors of health and differed significantly by residential school attendance.

DISCUSSION

Residential school attendance predicted negative health status both directly and indirectly through socioeconomic and community risk factors. Study results were clear in demonstrating the relevance of considering multiple pathways to poor health status and the need for theoretical development and research to further clarify determinants of Indigenous health according to the complex context of colonization-related events and socioeconomic and community conditions. The health of the Indigenous population continues to be affected adversely by injustices of a colonial history that yielded inequalities in the distributions of health determinants. Former IRS students were significantly more disadvantaged than were other respondents on an array of indicators of SES and community or neighborhood psychosocial adversities, which in turn comprised significant explanatory mechanisms linking IRS attendance to poor health outcomes. Controlling for these factors, the direct effect of IRS attendance on health status remained significant, although it was attenuated substantially, thereby highlighting both the robustness of the effect of residential school attendance on health and the explanatory influences of socioeconomic and community adversities.

On the basis of results of Canadian national and regional surveys and qualitative studies, residential school attendance was associated with low income and educational and occupational attainments.[4] The study findings were consistent and furthermore demonstrated that socioeconomic disadvantages were strong predictors of poor health status and significantly mediated the effect of IRS attendance on health. That is, results underscored the influence of residential school attendance in constraining the possibilities for positive health outcomes through limited access to socioeconomic

TABLE 3—Predicted Distribution of General Health Status: Aboriginal Peoples Survey, Canada, 2006

General Health	Model 1		Model 2		Model 3	
	Attended IRS	Did Not Attend	Attended IRS	Did Not Attend	Attended IRS	Did Not Attend
Poor	0.121	0.074	0.098	0.077	0.095	0.077
Fair	0.219	0.136	0.171	0.146	0.168	0.146
Good	0.307	0.276	0.296	0.281	0.294	0.281
Very good	0.237	0.327	0.290	0.315	0.293	0.315
Excellent	0.116	0.187	0.145	0.181	0.149	0.181

Note. IRS = Indian residential school. The dissimilarity distribution is one half of the sum of the absolute difference in each level of self-reported health between the 2 population groups. The dissimilarity of distribution for model 1 is 0.161, for model 2 is 0.062, and for model 3 is 0.053.

resources. Consistently, adverse health outcomes have been associated with indicators of low SES in Indigenous populations.[3] For individuals with histories of attending an IRS, these disadvantages might be more profound over the life course because of the harsh and abusive conditions[14] and lack of a strong academic curriculum and adequate classroom instruction[13] that prevented students from acquiring the academic skills necessary to attain socioeconomic success. However, the Aboriginal Peoples Survey content pertaining to residential schools was restricted to a dichotomous rating of attendance versus nonattendance, thereby precluding the possibility of determining what IRS-specific conditions may be linked to subsequent socioeconomic disadvantages.

According to the relevant literature, high rates of school dropout exist among litigants citing maltreatment and abuse at residential schools.[28] Also, many factors that have been shown to contribute to low academic achievement and attainment, including lack of emphasis on academic instruction, teacher expectations of student failure, and the fragmented nature of English language acquisition among students,[29,30] were systemic problems within residential schools.[3]

Recognition that Indigenous health status is determined by complex multiple contextual influences necessitates more comprehensive analyses simultaneously incorporating the effects of community-level adversities and individual socioeconomic risk factors. Community is a level of ecological influence that may be highly salient for understanding Indigenous health but that is relatively unexamined in

research with Indigenous populations owing partly to the continued application of conventional health determinants models emphasizing socioeconomic factors.[31] Research directed at predicting health outcomes primarily on the basis of individual socioeconomic status is limited because of the failure to acknowledge the complex psychosocial and economic risk conditions that exist in Aboriginal communities. A markedly large share of the Aboriginal population in Canada resides in communities or neighborhoods affected by high levels of psychosocial difficulties, insufficient social and health services, impoverished housing conditions, poverty, violence, and minimal sociopolitical influence.[3,32] Results demonstrated that negative health outcomes are associated with adversity affecting Aboriginal peoples in respondents' communities and that perceived community adversity is a significant explanatory mechanism underlying the impact of residential school attendance on health, even when controlling for the effects of individual socioeconomic factors.

The pattern of findings reflects an underinvestment in building Aboriginal community capacity in terms of psychosocial and economic resources that will have implications for health. Further research is warranted on the effects of other community contextual factors important to explaining health status in Indigenous populations. The self-reported indicators of community adversity reflected highly prevalent adverse conditions that exist in Aboriginal communities and neighborhoods. For more extensive analyses of multilevel influences on health, community factors will be measured as

objective, independent estimates of an expanded set of community-level conditions including neighborhood poverty, unemployment rates, violence, crime, and racial diversity, as well as other macrolevel factors that may wield equal or greater influences on Aboriginal health, such as the availability of culturally compatible social and health care services, the presence of community facilities and events for preserving cultural traditions, and community capacity for self-determination. Accordingly, there is also a need to compile indicators of community conditions that reflect Indigenous peoples' perspectives of ecological factors that affect health status.

This study is a step toward establishing a more comprehensive Indigenous health framework for research and intervention by broadening the scope of health determinants beyond conventional risk factors underlying illness vulnerability. Despite directed policies for reducing inequalities in health status and mortality, relatively more negative outcomes persist in the Aboriginal population in terms of shorter life expectancies, higher rates of infant mortality and poor birth outcomes, chronic diseases, and suicide.[33–36] Empirical evidence for the influences of colonization, socioeconomic, and community-level factors in the etiology of poor health status may begin to address these more intractable inequalities. ■

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