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Abstract

Background
Aboriginal children have been shown to experience poorer health, compared with their non-Aboriginal counterparts. Differences in health status may be associated with family and social conditions, lifestyle or behaviour, and cultural factors.

Data and methods.
The current study examined the parent-/guardian-reported health of First Nations children living off reserve and Métis children younger than 6. This does not include the 43% of First Nations children who were living on reserves in 2006. Data from the 2006 Aboriginal Children's Survey were used to investigate measures of child health and assess possible associations with social determinants of health.

Results
Most First Nations children living off reserve and Métis children were reported to be in excellent or very good health. The most common chronic conditions reported by parents/guardians were asthma, speech and language difficulties, allergies, and lactose intolerance. Several social determinants were associated with child health, including parental education, household income, breastfeeding, and perceptions of housing conditions and health facilities in the community.

Interpretation
The findings suggest that social factors can be associated with parent-/guardian-rated health of First Nations children living off reserve and Métis children under age 6.

Keywords
Aboriginal, child health, chronic disease, indigenous, limitation of activity, social environment, socio-economic status

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Research has shown that Aboriginal children experience poorer health than do non-Aboriginal children.[1-3] For example, a recent report[4] revealed substantial Aboriginal/non-Aboriginal health differences, including higher rates of injury, accidental death, and sudden infant death syndrome. Aboriginal children are at higher risk of otitis media (chronic ear infection), respiratory tract infections,[5] obesity,[6] dental problems,[7] and hospitalization due to asthma.[8]

It has been suggested that the health differences between Aboriginal and non-Aboriginal populations are associated with social rather than biological determinants,[9] many of which warrant further study for children specifically.[4,10] Family and social conditions such as household income,[8] parental education,[11] family structure,[12] smoking in the home,[12-14] and food security[15] have been found to be related to Aboriginal child health. Child health has also been linked to community characteristics, including housing[16,17] and neighbourhood conditions.[18]

Cultural involvement and identity have been recognized as playing a role in the health and well-being of Aboriginal people,[19] although little information is available about children. King et al.[9] reported that traditional teachings are related to overall health and self-image, with ties to culture and identity being associated with good health.

Earlier studies, as well as Aboriginal groups and leaders, have recommended that rather than considering all Aboriginal peoples together, distinctions should be made between First Nations, Métis, and Inuit.[10] And even comparisons between groups may be inadvisable, because they differ in cultural background, access to health care, and region of residence.

The current study examines parent-/guardian-reported data about the general health, chronic conditions and physical limitations of First Nations children living off reserve and Métis children younger than 6. The data are from the 2006 Aboriginal Children's Survey (ACS). Parent-/guardian-reported general health has been shown to be a good measure of overall child health.[3,20] As well, this approach is consistent with previous research (for example, the First Nations Regional Health Survey) and is widely employed as a health surveillance tool.[21]

Methods

Data source

The 2006 ACS was developed by Statistics Canada and Aboriginal advisors from across the country. It was conducted jointly with Human Resources and Skills Development Canada. The survey was designed to provide data about children's early development and their social and living conditions.

The ACS target population consisted of First Nations children living off reserve, Métis children and Inuit children in the 10 provinces, as well as all Aboriginal children in the three territories. Children were identified on the ACS as "North American Indian"; however, the term "First Nations" is used throughout this report.

The sample of children younger than age 6 was selected from households with children identified by the 2006 Census as having Aboriginal ancestors; and/or identified as North American Indian and/or Métis and/or Inuit; and/or had treaty or registered Indian status; and/or had Indian Band membership. Children living on First Nation reserves were not included in the survey sample; thus, the results do not apply to the on-reserve population who accounted for an estimated 43% of First Nations people in 2006.[22]

The overall response rate to the ACS was 81.1% (n = 12,845 children, representing a population of approximately 135,000 Aboriginal children younger than age 6). More information about the ACS is available elsewhere.[23] The current study pertains only to children whose parents reported that the children had single or multiple First Nations (n = 5,167) or Métis (n = 3,793) identity. Fewer than 2% of the population reported more than one Aboriginal group; therefore, only a small percentage of the population was doubled-counted.

Measures

Socio-demographic characteristics

The parent/guardian who responded to the ACS was the biological mother or father for 90% of First Nations children living off reserve and 94% of Métis children. The parent/guardian provided information about the child's sex and age at the time of the interview, the parent's/guardian's educational attainment, the number of people in the household, total household income, the number of times the child had moved, and the province or region (Table 1). The parent/guardian also reported the number of people involved in raising the child (for example, father, grandparents, other family members), which was categorized as one, two, or three or more persons. The number of people raising the child was expected to be a more appropriate way of exploring family structure for Aboriginal children than the one-/two-parent dichotomy. [24]

Because of small sample sizes, the Atlantic provinces (Newfoundland and Labrador, Nova Scotia, New Brunswick, and Prince Edward Island) were grouped, as were the territories (Yukon, Northwest Territories, and Nunavut).

Information was collected on whether the child had been breastfed, and if so, the number of months.

Household food security was measured by the question: "How often has the child experienced being hungry because the family has run out of food or money to buy food?" Response options were: *more often than the end of each month, regularly at the end of the month*, *every few months*, *occasionally*, and *never*. For this study, food-insecure households were defined as those where the child experienced hunger because of food unavailability at least occasionally; the remaining households were defined as food-secure.

Information about smoking was collected with the question: "Including household members and regular visitors, does anyone smoke inside your home every day or almost every day?" (*yes*, *no*).

The child's level of activity was estimated from a question about the frequency of active play (*at least once per day*, *less than once per day*, or *never*). Total daily hours of screen time (watching television and/or playing video games or computer use) was also reported.

The parent/guardian answered questions about satisfaction with their housing conditions (*very satisfied* or *satisfied* versus *dissatisfied* or *very dissatisfied*) and the community as a place with: i) health facilities, and ii) cultural activities (*excellent*, *very good*, *good* versus *fair, poor*).

Health indicators

As an overall marker of health, the parent/guardian reported the child's general health as: *excellent* or *very good* versus *good, fair* or *poor*. Other health outcomes were limitations on the child's physical activity due to a health condition (*yes*, *no*), the number of ear infections the child had in the past year, and whether the child had dental problems (*yes*, *no*). Only children aged 3 or older were included in the analysis of the dental questions, as the current recommendation is that children have regular dental check-ups by age 2 or 3. The parent/guardian reported the presence of chronic conditions, including asthma, allergies, visual/hearing impairment, heart conditions, diabetes, and Fetal Alcohol Disorder (Appendix A contains a list of chronic conditions included on the ACS). If a chronic condition was reported, the parent/guardian was asked if it had been diagnosed by a medical professional (*yes*, *no*). If the condition had been professionally diagnosed, the parent/guardian was asked if the child had received treatment for it (*yes*, *no*).

The prevalence of chronic conditions was examined to determine which occurred most frequently. Conditions with a prevalence rate of 5% or more were retained; remaining conditions were collapsed into an "other" category. Information about the prevalence of the specific conditions in the other category is available in Appendix A.

Statistical analyses

Bivariate statistics were used to describe the socio-demographic characteristics of the sample and the indicators of child

health. For some markers of health, information about non-Aboriginal children was available from the 2006 National Longitudinal Survey of Children and Youth. However, no statistical comparisons were made between Aboriginal and non-Aboriginal children because of differences in the sample and/or in the questions asked by the two surveys.

Within each Aboriginal group, chi-square comparisons and t-tests were calculated to identify socio-demographic and lifestyle characteristics significantly associated with excellent/very good versus good/fair/poor parent-/guardian-rated health. Self-rated health has been dichotomized this way in previous research,[25] in particular, with Aboriginal children,[3] and was deemed appropriate because of the young age of this sample, the majority of whom would be expected to be in excellent/very good health.

Logistic regression analyses were performed predicting excellent/very good parent-/guardian-rated child health from the various social determinants. The purpose of these analyses was to determine which associations between child health and social determinants remained significant when the other determinants were also considered. Only variables significantly associated with the outcome variable at a univariate level (within Aboriginal groups) were included in the logistic regression models. Separate models were fitted for First Nations children living off reserve and Métis children.

Active play was excluded from the chi-square and regression analyses because of very little variation—almost all children were reported to engage in active play daily.

Survey sampling weights were used to ensure that all analyses were representative of the First Nations living off reserve and Métis populations in Canada. To account for the complex survey design, a bootstrapping technique was used for variance estimation,[26] and the appropriate multiplicative factor (the "Fay adjustment factor") was applied.[23]

Table 1
Selected characteristics of First Nations children living off reserve and Métis children younger than age 6, household population, Canada, 2006

	First Nations living off reserve (%) (n=5,167)	Métis (%) (n=3,793)
Sex		
Boys	50.7	51.8
Girls	49.3	48.2
Mean age in months (standard error)	**39.5** (0.24)	**39.7** (0.29)
Parent/Guardian education		
Less than secondary graduation	31.1	21.1
Secondary graduation or more	68.9	78.9
Number of people involved in raising child		
1	10.1	8.9
2	34.7	39.0
3 or more	55.2	52.1
Province/Territory		
Atlantic provinces	5.2	4.3
Québec	6.2	6.6
Ontario	26.3	17.6
Manitoba	13.3	19.5
Saskatchewan	12.7	14.0
Alberta	15.3	23.7
British Columbia	17.5	12.8
Yukon/Northwest Territories/Nunavut	3.6	1.6
Mean number of people in household (standard error)	**4.3** (0.02)	**4.2** (0.02)
Child breastfed		
Yes	72.3	74.6
No	27.7	25.4
Mean number of months child was breastfed (standard error)	**7.9** (0.14)	**7.3** (0.15)
Food-secure household		
Yes	94.9	97.4
No	5.1	2.6
Smoking		
Regular smoker in home	18.8	19.7
No regular smoker in home	81.2	80.4
Frequency of active play		
At least once per day	96.8	96.8
Less than once per day	2.2	2.1
Never	1.1	1.2[E]
Mean daily hours of screen time (standard error)	**2.6** (0.03)	**2.4** (0.03)
Housing conditions		
Very satisfied/Satisfied	84.0	90.1
Dissatisfied/Very dissatisfied	16.0	10.0
Local health facilities		
Excellent/Very good/Good	79.0	79.8
Fair/Poor	21.0	20.2
Local cultural activities		
Excellent/Very good/Good	43.4	41.3
Fair/Poor	56.6	58.7

[E] use with caution
Source: 2006 Aboriginal Children's Survey.

Results

First Nations children living off reserve

Health indicators

According to their parent/guardian, 85% of First Nations children younger than age 6 living off reserve were in excellent or very good health (Table 2). This compared with 90% of all Canadian children. Few First Nations children living off reserve (5%) were reported to have activity limitations due to a health condition. About half (51%) of First Nations children living off reserve had ever had an ear infection, and they averaged one infection in the past year. Of those aged 0 to 3, 46% (data not shown) of First Nations children living off reserve had had an ear infection, compared with 40% of all Canadian children in this age range.

Close to a third (30%) of First Nations children aged 3 or older living off reserve were reported to have had dental problems.

The most common chronic conditions among First Nations children living off reserve were asthma (10%), speech/language difficulties (10%), allergies (9%), and lactose intolerance (7%). One in six children (15%) had another chronic condition. However, not all children reported to have a chronic condition had been diagnosed by a health professional. For example, 70% of those with lactose intolerance, 76% with speech/language difficulties, 78% with allergies, and 95% with asthma had been professionally diagnosed. Of those who had been diagnosed, the prevalence of treatment varied from 57% for lactose intolerance to 96% for asthma.

Table 2
Health status of children, by Aboriginal identity, household population younger than age 6, Canada, 2006

	First Nations living off reserve (%)	Métis (%)	Total Canadian children (%)†
General health			
Excellent	59.6	63.0	64.6
Very good	25.1	24.5	25.8
Good	11.9	9.7	8.5
Fair	2.6	2.5	1.0
Poor	0.7[E]	0.3[E]	0.2[E]
Physical activity limited by health condition			
Yes	4.6	3.9	..
No	95.4	96.1	..
Ever had ear infection			
Yes	50.5	51.4	40.1‡
No	49.5	48.6	59.9‡
Mean number of ear infections in past year (standard error)	1.3 (0.04)	1.2 (0.04)	..
Dental problems			
Yes	29.9	22.4	..
No	70.1	77.6	..
Chronic conditions			
Asthma	10.4	9.7	..
Of those who report, % diagnosed	94.6	95.9	7.8§
Of those diagnosed, % received treatment	96.2	96.6	..
Speech/Language difficulties	10.2	9.3	..
Of those who report, % diagnosed	75.8	74.7	..
Of those diagnosed, % received treatment	82.2	81.2	..
Any allergies	9.1	10.4	..
Of those who report, % diagnosed	78.1	81.3	9.3§
Of those diagnosed, % received treatment	65.9	62.1	..
Lactose intolerance	7.4	5.6	..
Of those who report, % diagnosed	69.9	71.8	..
Of those diagnosed, % received treatment	57.0	52.5	..
Other conditions	16.2	14.7	..
Of those who report, % diagnosed	86.8	87.4	..
Of those diagnosed, % received treatment	83.3	84.4	..

† based on 2006 National Longitudinal Survey of Children and Youth
‡ aged 0 to 3
§ diagnosed by health professional only
.. not available for specific reference period
[E] use with caution
Sources: 2006 Aboriginal Children's Survey, 2006 National Longitudinal Survey of Children and Youth.

Social determinants of health

The characteristics of First Nations children living off reserve who were in excellent/very good health differed from those of First Nations children living off reserve in good/fair/poor health (Table 3). Girls were significantly more likely than boys to be reported as being in excellent/very good health. The likelihood of excellent/very good health was significantly higher among children whose parent/guardian had graduated from secondary school, and among children raised by at least two people.

Geographic differences were also evident, with First Nations children living off reserve in the Atlantic provinces and Ontario significantly more likely to be in excellent/very good health than were those in the western provinces and the Territories. As well, children in Saskatchewan were less likely to be in excellent/very good health than were those in Quebec, Alberta or British Columbia. Children in excellent/very good health tended to live in smaller households with a relatively high mean household income, and had moved fewer times ($t = 4.98$, $p < .001$) (data not shown because mean number of moves per year of age is not interpretable).

First Nations children living off reserve who had been breastfed were more likely to be in excellent/very good health than were those who had not been breastfed. The prevalence of excellent/very good health was also higher among

Table 3
Social determinants of parent-/guardian-rated health status of First Nations children living off reserve and Métis children, household population younger than age 6, Canada, 2006

	Parent-/Guardian-rated health status							
	First Nations living off reserve				Métis			
	Excellent/ Very good (%)	Good/ Fair/ Poor (%)	Chi-square/ t-test	p-value	Excellent/ Very good (%)	Good/ Fair/ Poor (%)	Chi-square/ t-test	p-value
Sex								
Boys	83.6	16.4	4.99	<.05	85.7	14.3	7.54	<.01
Girls	86.0	14.0			88.9	11.1		
Age group								
0 to 23 months	84.7	15.3	0.47	ns	89.9†	10.1	5.46	<.01
2 or 3 years	84.3	15.7			87.3	12.7		
4 or 5 years	85.4	14.6			85.5	14.5		
Parent/Guardian education								
Less than secondary graduation	80.1	19.9	29.47	<.0001	81.6	18.4	22.34	<.0001
Secondary graduation or more	87.0	13.0			88.9	11.1		
Number of people involved in raising child								
1	75.9‡	24.1	11.13	<.0001	77.4‡	22.6	9.87	<.0001
2	86.9	13.1			89.0	11.0		
3 or more	85.2	14.8			87.5	12.5		
Province/Territory								
Atlantic provinces	89.2§	10.8E	6.54	<.0001	90.3	9.7E	3.77	<.001
Québec	86.9	13.1E			88.6	11.4E		
Ontario	89.3§	10.7			87.8	12.2		
Manitoba	81.9	18.1			87.8	12.3		
Saskatchewan	79.0††	21.0			80.0‡‡	20.0		
Alberta	83.8	16.2			89.9	10.1		
British Columbia	83.9	16.1			86.9	13.1		
Yukon/Northwest Territories/Nunavut	81.5	18.5			87.8	12.2E		
Mean number of people in household (standard error)	**4.3** (0.02)	**4.7** (0.07)	-5.69	<.0001	**4.1** (0.02)	**4.2** (0.07)	-1.07	ns
Mean household income (standard error)	**50,700** (711.0)	**42,200** (1,146.6)	6.31	<.0001	**61,600** (834.2)	**44,500** (1,592.3)	9.70	<.0001
Child breastfed								
Yes	86.6	13.4	21.62	<.0001	88.9	11.1	16.67	<.0001
No	80.7	19.3			82.8	17.2		
Food-secure household								
Yes	85.4	14.7	9.84	<.01	87.5	12.5	3.93	<.05
No	76.3	23.7			79.0	21.0E		
Smoking								
No regular smoker in home	85.7	14.3	7.16	<.01	88.5	11.5	11.76	<.0001
Regular smoker in home	81.6	18.4			82.7	17.4		
Mean daily hours of screen time (standard error)	**2.6** (0.03)	**2.6** (0.03)	-0.80	ns	**2.4** (0.03)	**2.6** (0.09)	-1.87	ns
Housing conditions								
Very satisfied/Satisfied	86.2	13.8	24.47	<.0001	88.2	11.8	14.48	<.0001
Dissatisfied/Very dissatisfied	77.7	22.3			79.4	20.6		
Community health facilities								
Excellent/Very good/Good	85.9	14.1	8.46	<.01	89.0	11.0	21.61	<.0001
Fair/Poor	81.9	18.1			81.4	18.6		
Community cultural activities								
Excellent/Very good/Good	85.1	14.9	0.00	ns	86.6	13.4	0.27	ns
Fair/Poor	85.0	15.0			87.3	12.7		

† significantly different from older children (p<0.05)
‡ significantly different from 2 and from 3 or more (p<0.05)
§ significantly different from Manitoba, Saskatchewan, Alberta, British Columbia and Yukon/Northwest Territories/Nunavut (p<0.05)
†† significantly different from Quebec, Alberta and British Columbia (p<0.05)
‡‡ significantly different from other provinces/territories (p<0.05)
E use with caution
ns = not significant
Sources: 2006 Aboriginal Children's Survey, 2006 National Longitudinal Survey of Children and Youth.

children in food-secure households and in households where smoking did not occur regularly. Total daily screen time did not differ between children in excellent/very good health versus good/fair/poor health.

Parent/guardian satisfaction with housing conditions and positive perceptions of local health care facilities were associated with higher percentages of children being reported in excellent/very good health.

Of course, many characteristics that were associated with children's being in excellent/very good health are, themselves, interrelated. For example, it is not unreasonable to expect some association between parent/guardian education, household income and food security.

When the potential effects of these factors were controlled simultaneously in a logistic regression model, several remained independently and significantly related to the health of First Nations children living off reserve (Table 4). The odds of being reported in excellent/very good health were lower if the child was male and if one person (compared with two) was raising the child. The odds of excellent/very good health declined as household size and residential moves increased.

Children whose parent/guardian had at least secondary graduation (compared with lower attainment), who lived in a higher-income household, and who had been breastfed had significantly higher odds of excellent/very good health. The odds of excellent/very good health were also higher for children whose parent/guardian was very satisfied or satisfied with their housing (versus dissatisfied or very dissatisfied), and perceived community health care facilities to be excellent or very good (versus fair or poor).

Table 4
Adjusted odds ratios relating social determinants to excellent/very good parent-/guardian-rated health, by Aboriginal identity, household population younger than age 6, Canada, 2006

	First Nations living off reserve (n=4,772)			Métis (n=3,606)		
	Adjusted odds ratio	95% confidence interval		Adjusted odds ratio	95% confidence interval	
		from	to		from	to
Sex						
Boys	0.8*	0.7	1.0	0.8*	0.6	1.0
Girls†	1.0	...	...	1.0	...	...
Age in months	§	...	...	1.0	1.0	1.0
Parent/Guardian education						
Less than secondary graduation†	1.0	...	...	1.0	...	...
Secondary graduation or more	1.2*	1.0	1.5	1.1	0.8	1.4
Number of people involved in raising child						
1	0.6*	0.4	0.8	0.6*	0.4	0.8
2†	1.0	...	...	1.0	...	...
3 or more	0.9	0.7	1.1	0.8	0.6	1.0
Household size‡	0.9*	0.8	0.9	§	...	...
Household income‡	1.1*	1.0	1.1	1.2*	1.1	1.3
Number of times child moved (per year of age)‡	0.9*	0.9	1.0	0.9*	0.9	1.0
Child breastfed						
Yes	1.5*	1.2	1.8	1.4*	1.1	1.8
No†	1.0	...	...	1.0	...	...
Food-secure household						
Yes†	1.0	...	...	1.0	...	...
No	0.7	0.5	1.1	0.8	0.4	1.3
Smoking						
Regular smoker in home	1.0	0.8	1.2	0.8	0.7	1.1
No regular smoker in home†	1.0	...	...	1.0	...	...
Housing conditions						
Very satisfied/Satisfied	1.4*	1.2	1.8	1.5*	1.1	2.0
Dissatisfied/Very dissatisfied†	1.0	...	...	1.0	...	...
Community health facilities						
Excellent/Very good/Good	1.3*	1.1	1.6	1.6*	1.3	2.1
Fair/Poor†	1.0	...	...	1.0	...	...

† reference category
‡ continuous variable
§ because of non-significant univariate results, predictor not included in model
* significantly different from reference category ($p<0.05$)
... not applicable
Source: 2006 Aboriginal Children's Survey.

Métis children

Health indicators

An estimated 87% of Métis children were reported by their parent or guardian to be in excellent or very good health (Table 2); for 4%, physical activity was limited by a health condition. Just over half (51%) of Métis children had had at least one ear infection in their lifetime (45% of those aged 3 or younger). Those who had ever had an ear infection experienced an average of one such infection in the past year. More than a fifth (22%) of Métis children aged 3 to 5 had had a dental problem in the past year.

The most common chronic conditions among Métis children were asthma (10%), allergies (10%), speech/language difficulties (9%), and lactose intolerance (6%). One child in 6 (15%) had another chronic condition. Of those with a chronic condition, the percentage who had been diagnosed by a medical professional ranged from 72% (lactose intolerance) to 96% (asthma). And of those diagnosed, 53% with lactose intolerance, 62% with allergies, 81% with speech/language difficulties, and 97% with asthma had received treatment.

Social determinants of health

Girls and younger Métis children were more likely than boys and older children to be reported in excellent/very good health (Table 3). Higher educational attainment (secondary graduation or more) of the parent/guardian and being raised by two or more people (compared with one) were also associated with better health. Métis children in Saskatchewan were less likely to be reported as having excellent/very good health than were those elsewhere. Living in a higher-income household, experiencing relatively few residential moves (t = -4.93, p < .001), and having been breastfed were related to being in excellent/very good health (Table 3).

As well, children who lived in households that were food secure and where smoking in the home was not a regular occurrence were more likely to be in excellent/very good health. Screen time per day was not related to whether children were in excellent/very good versus good/fair/poor health. However, favourable parent-/guardian-reported perceptions of housing and community health facilities were associated with higher percentages of children in excellent/very good health.

When the social determinants of health were considered simultaneously (Table 4), several of them remained significantly related to the odds of Métis children being reported in excellent/very good health. Boys and children raised by one person (rather than two) had significantly lower odds of excellent/very good health. The odds of being in excellent/very good health declined as the number of residential moves increased. Children who were in higher-income households, who had been breastfed, and whose parent/guardian was very satisfied or satisfied with their housing and who perceived the community as having excellent, very good or good health facilities had higher odds of excellent/very good health than did children who did not share these characteristics.

Discussion

According to the 2006 Aboriginal Children's Survey, the majority of First Nations children living off reserve (85%) and Métis children (87%) younger than age 6 were reported to be in excellent or very good health by their parent or guardian. These percentages were lower than the 90% of all Canadian children in this health status category. These findings support previous work indicating health disparities for Aboriginal children.[4,8]

The most common chronic conditions reported by parents/guardians of First Nations and Métis children were asthma, speech/language difficulties, allergies, and lactose intolerance. This is similar to results of the First Nations Regional Health Survey,[3] which found asthma, allergies, and chronic ear infections to be the most common chronic conditions among First Nations children who lived on reserves. In the current study, the likelihood that these conditions had been professionally diagnosed and treated varied substantially, which may reflect differences in access to medical care or treatment options.[4,27]

In the multivariate analysis, several social determinants were significantly associated with excellent/very good health for First Nations children living off reserve and Métis children: parent/guardian education, number of people involved in raising the child, household income, residential moves, and breastfeeding. By contrast, provincial differences in the prevalence of excellent/very good health at the univariate level disappeared in the multivariate models. This suggests that the effect of geography was mediated by/correlated with other variables included in the models.

Significant associations emerged between child health and the parent's/guardian's perceptions of the community. Even when the other family and social factors were taken into account, the odds that First Nations children living off reserve and Métis children would be reported in excellent/very good health were higher if the parent/guardian perceived housing conditions as excellent, very good or good. In addition, the odds of a favourable health rating were significantly higher for children whose parent/guardian perceived community health facilities to be excellent/very good/good rather than fair/poor. However, because the data are self-reported, a positive response bias is possible; that is, parents who rate their child's health positively may also be more likely to rate their housing and community health care facilities favourably.

What is already known on this subject?

- Research has revealed disparities in the health of Aboriginal and non-Aboriginal children.
- It has been suggested that such differences stem from social rather than biological determinants.
- Much previous research examines Aboriginal peoples as a whole, although it has been recommended that studies focus on specific Aboriginal groups.

What does this study add?

- The current study uses parent-/guardian reported data to examine the health of children younger than age 6 who were identified as First Nations living off reserve or as Métis.
- More than 85% of the children in each group were reported to be in excellent or very good health.
- The most common chronic conditions reported by parents/guardians were asthma, speech and language difficulties, allergies, and lactose intolerance.
- Several social determinants of health were associated with child health, including parental education, household income, breastfeeding, perceived housing conditions, and community health care facilities.

Limitations and future directions

Despite numerous strengths of the current study, notably, the large and representative sample of Aboriginal children, several limitations should be noted. First Nations children who lived on reserves (43% of all First Nations children) were not included in the ACS; therefore, the findings cannot be generalized to that population. In addition, the measures were parent-reported and cross-sectional (taken at one time point). Longitudinal research, perhaps including multiple sources of data, is necessary to better understand the nature of the relationship between social conditions, health behaviours and health outcomes for Aboriginal children.

Nonetheless, the ACS parent/guardian ratings of general health are likely valid measures. Preliminary analyses revealed an association between chronic conditions and general health—children with such conditions were more likely to be rated by their parent/guardian as being in poorer health, compared with children who did not have such conditions. However, future work could consider other indices of child health.

Finally, a cautionary note should be placed on the interpretation of "health." Depending on the parent's/guardian's perceptions, the assessment of children's health may or may not include mental health. Aboriginal peoples' definition or interpretation of general health may be based on a holistic approach that encompasses physical, mental, emotional, and spiritual aspects.[9,28,29] Thus, the measures of child health in this analysis may not fully capture First Nations or Métis understanding of what constitutes health.

Conclusion

The current study provides evidence for associations between the health of Aboriginal children and several social determinants of health, including the number of people raising the child, breastfeeding, housing conditions, and perceptions of community health facilities. Future work is warranted to examine other markers and predictors of child health among First Nations living off reserve and Métis. ■

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Appendix

Table A
Prevalence of chronic conditions, diagnosis and treatment, by Aboriginal identity, household population younger than age 6, Canada, 2006

	First Nations living off reserve			Métis		
	%	Of those who report, % diagnosed	Of those diagnosed, % received treatment	%	Of those who report, % diagnosed	Of those diagnosed, % received treatment
Asthma	10.4	94.6	96.2	9.7	95.9	96.6
Speech/Language difficulties	10.2	75.8	82.2	9.3	74.7	81.2
Lactose intolerance	7.4	69.9	57.0	5.6	71.8	52.5
Food/Digestive allergies	3.8	74.0	67.6	3.9	73.4	62.0
Respiratory allergies	3.1	83.5	90.0	4.0	79.6	93.2
Other allergies	3.6	79.5	46.0	4.7	86.9	43.0
Visual impairment	2.5	93.9	88.1	2.6	97.0	85.3
Hearing impairment	2.0	87.6	79.2	1.6	85.3	88.8
ADD/ADHD	1.9	62.0	51.4	1.5	61.9	67.9
FAS/FASD	1.8	72.3	52.9	0.7[E]	79.1	x
Heart condition or disease	1.7	93.7	36.8	2.1	99.3	45.6
Anaemia	1.7	93.9	97.2	1.4	93.5	91.1
Chronic bronchitis	1.6	89.5	92.5	1.5	79.7	100.0
Anxiety or depression	1.2	35.2[E]	66.8	1.0[E]	47.9[E]	56.0[E]
Kidney condition/Disease	0.7[E]	94.5	81.4	0.6[E]	100.0	68.0
Epilepsy	0.5[E]	93.0	89.5	0.4[E]	93.5	100.0
Autism	0.3[E]	100.0	x	0.5[E]	94.6	x
Cerebral palsy	0.3[E]	100.0	100.0	x	x	x
Hypoglycemia/Low blood sugar	0.3[E]	100.0	x	0.5[E]	74.5	x
Tuberculosis	0.1[E]	x	x	x	x	x
Diabetes	x	x	x	x	x	x
Down syndrome	x	x	x	x	x	x
Spina bifida	x	x	x	x	x	x

[E] use with caution
x suppressed to meet confidentiality requirements of Statistics Act
Sources: 2006 Aboriginal Children's Survey.