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Résumé de l'article

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# Tobacco Smoking Among First Nations Youth Living on Reserve and in Northern Communities: A Mixed Methods Study

## **Abstract**

The prevalence of tobacco smoking among First Nations youth living on reserve and in Northern communities is significantly higher than off-reserve Indigenous youth in Southern communities and non-Indigenous youth, although the majority do not smoke. Using a mixed-methods approach, we examine factors that support on-reserve First Nations youth's resilience to smoking. Logistic regression analyses using data from the nationally representative First Nations Regional Early Childhood, Education, and Employment Survey suggest that not using other substances, having friends who do not smoke or use other substances, and having good mental health is associated with not smoking. A review of select community initiatives and in-depth interviews with First Nations anti-tobacco initiative managers and frontline workers about the initiatives also revealed the need for gender- and community-specific programming, recognition of Indigenous social determinants of health, and addressing the normalization of smoking in some community contexts.

## **Keywords**

First Nations, youth, on-reserve, smoking, health behaviours

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## **Tobacco Smoking Among First Nations Youth Living on Reserve and in Northern Communities: A Mixed Methods Study**

The prevalence of tobacco smoking among First Nations youth living on reserve and in Northern communities is significantly higher than for off-reserve Indigenous youth and non-Indigenous youth in Canada (Bougie & Kohen, 2018; Elton-Marshall et al., 2011; Gionet & Roshanafshar, 2013). Recent reports, however, indicate that the majority of First Nations youth do not smoke tobacco (First Nations Information Governance Centre [FNIGC], 2016b). Moreover, the number who do smoke has declined in recent years, with most First Nations youth identifying as having never smoked tobacco (FNIGC, 2018). Nonetheless, tobacco is an addictive substance and smoking tobacco is a leading cause of premature death in Canada (Government of Canada, 2011), including among First Nations.

The non-sacred smoking of commercial cigarettes is associated with negative health effects such as cancer, pulmonary and cardiovascular diseases, as well as death (Canadian Substance Use and Addiction, 2018; Canadian Tobacco Alcohol and Drugs, 2017; Government of Canada, 2016). With this recognition, it is important to also acknowledge that, historically and in the present day, tobacco use has traditional spiritual and ceremonial purposes as a sacred medicine for First Nations. Therefore, it is important to understand the factors associated with First Nations youth refraining from smoking tobacco for non-ceremonial purposes based on a strength-based cultural perspective.

This article focuses on factors associated with resilience to tobacco smoking amongst First Nations youth (ages 12-17) living in First Nations communities. Our study is based on the 2013 to 2015 First Nations Regional Early Childhood, Education and Employment Survey (FNREEES),<sup>1</sup> a review of select community tobacco initiatives aimed at reducing tobacco use, and interviews with the managers and frontline workers. The aim of this article is to contribute to this under-researched area to better understand the tobacco smoking behaviours of First Nations youth on reserve and in Northern First Nations communities.

### **Background**

There has been considerable attention paid to youth tobacco smoking behaviours amongst the general Canadian population (see for example Saewyc et al., 2006), but less towards First Nations youth. Very few studies have examined the smoking behaviours of First Nations youth living on reserve and in Northern communities, or the factors that promote resilience to smoking tobacco (FNIGC, 2016b; FNIGC, 2018).

One notable exception is the 2016 report of the First Nations Information Governance Centre (FNIGC, 2016b). This study analyzed data from First Nations youth aged 12 to 17 living on reserve and in Northern communities from the First Nations Regional Health Survey (FNRHS, or RHS) with a specific focus on protective factors, which are reviewed in the following sections.

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<sup>1</sup>The 2013 to 2015 FNREEES was conducted by the First Nations Information Governance Centre, an independent First Nations-led research and data governance body.

## **Personal or Individual Attributes**

### ***Gender and Age***

The RHS found that First Nations male youth living in First Nations communities were more likely to be non-smokers than females, which is similar to the gender differences found for First Nations youth living off reserve (Elton-Marshall et al., 2011), but opposite to what has been found among non-First Nations youth in Canada (Leatherdale & Burkhalter, 2012). Further, amongst First Nation youth who smoked tobacco, the RHS reported that males tend to smoke more cigarettes than females. This discrepancy could be explained by the influence of gender roles, which can affect how males and females are differentially perceived by their families, peers, and communities (De Finney et al., 2013). Gender roles can also carry stereotypes and expectations such as familial support and domestic responsibilities (De Finney et al., 2013; Julien et al., 2008). Some Indigenous communities are traditionally matriarchal, and colonialism disrupted this structure and imposed Western gender roles. As a result, one reason for the discrepancy could be that female Indigenous youth are subject to more social stressors than their male counterparts and tobacco smoking acts as a coping mechanism (De Finney et al., 2013). In terms of age, the literature on Canadian youth smoking rates indicates that when compared to their younger counterparts, older adolescents are more likely to smoke tobacco (Larsen et al., 2017).

### ***Mastery***

Another personal attribute considered in the RHS that has been shown to serve as a protective variable for Indigenous youth tobacco smoking behaviours is mastery, or the perceived control over one's life (FNIGC, 2018; Younger, 1991). Previous research on cigarette smoking identifies that the achievement of goals through a person's own means is associated with a reduction in the number of cigarettes smoked per day (Warner et al., 2018). As adolescence is marked with an increasing desire for autonomy (Arnett, 1998), an analysis of the ability or perceived ability to independently handle situations could add further insight to the trends in smoking among Indigenous youth. For example, many youths on First Nations reserves have limited options for local higher education opportunities, thus making career goals more difficult to achieve.

### ***Mental Health***

The RHS indicated that youth who reported better mental health were more likely to be non-smokers (FNIGC, 2018). The literature also draws a relationship between mental health complications and tobacco use among Indigenous children and youth. Specifically, low self-esteem, stress, and suicidal ideation have been found to be associated with tobacco use among Indigenous children and youth (De Finney et al., 2009; Lemstra et al., 2011).

### ***Other Substance Use***

The use of other substances, including the misuse of prescription medications, is commonly associated with smoking, especially during adolescence (Leatherdale & Burkhalter, 2012; Yu et al., 2005). In the general youth population, over 99% of Canadian youth who had ever smoked a cigarette had also tried either alcohol or marijuana (Leatherdale & Ahmed, 2010), and youth who engage in binge drinking are more likely to use tobacco and/or marijuana (Leatherdale et al., 2008). Based on responses to Health

Canada's Youth Smoking Survey, misuse of prescription drugs has been increasing among First Nations youth, and rates are up to 5 times greater than their non-Indigenous counterparts (Currie & Wild, 2012; Webster, 2012). Thus, the use of both prescription and non-prescription substances may be an additional factor to be considered when assessing youth tobacco smoking, which the RHS did not examine.

## **Education and Extracurricular Activities**

### ***School Enrolment***

The RHS data revealed that youth who attended school were more likely to be non-smokers (FNIGC, 2018). In the literature, school enrolment has been found to have a protective effect on adolescent cigarette smoking, especially among those who feel a strong sense of connection to their school community (Azagba & Asbridge, 2013). This could result from students having a routine of attending classes and doing homework, and spending more time doing supervised activities (Barnes et al., 2007).

### ***Extracurricular Activities***

Findings from the RHS also discussed the negative relationship between youth smoking and extracurricular physical activities (FNIGC, 2018). This could be explained by the association between Canadian youth who are involved in extracurricular activities, such as sports, and higher pro-social behaviour and self-esteem, as well as lower anxiety scores (Guèvremont et al., 2014). Among a representative sample of 14- to 17-year-old Canadian high school students, participation in extracurricular activities resulted in more positive academic, emotional, and behavioural outcomes (Guèvremont et al., 2014). Moreover, youth who were involved in both physical activities and non-sports extracurricular activities, such as volunteerism, were less likely to have tried smoking tobacco (Guèvremont et al., 2014).

## **Family and Household Characteristics**

### ***Family and Peer Influences***

The health of Indigenous youth is influenced by their family and community surroundings (Greenwood et al., 2018). According to the RHS, youth who lived in a smoke-free home and who lived with their biological parents were more likely to be non-smokers (FNIGC, 2016b).

Among the general and off-reserve First Nations youth populations, peer tobacco smoking was also found to have an influence on youth smoking behaviour. Far higher proportions of current smokers have friends who smoke, compared to non-smoking youth (Bougie & Kohen, 2018; Kaai et al., 2014; Population Health Research Group, 2008). While families and peer groups are influential in teen smoking initiation (Valentine et al., 2003), having a best friend who smokes has been identified as the most powerful predictor of tobacco smoking among Indigenous youth (Hutchison et al., 2008). As the sale of tobacco products to minors is prohibited by law, these factors can play a primary role in providing easier access to tobacco (Jetty, 2017).

### ***Social Support***

Previous studies have shown that youth with the most social support are more likely to have the ability to avoid negative health behaviours (Abel et al., 2011; Gagnè et al., 2015). Similarly, Canadian adolescents with a history of smoking cigarettes reported having less social support than those who have never smoked (Pederson et al., 1997). Due to stressors more frequently experienced at this time, such as changes in their work and school environments, living arrangements, family structure, and social networks (Hammond, 2005), it has been suggested that youth who do not have strong social support networks would be more likely to resort to smoking as a means to cope with these changes (Johnson et al., 2003; Low et al., 2012).

### ***Socioeconomic Status***

Studies examining the general youth population of Canada and the US find that household stability, uncrowded housing conditions, no experience in foster care, and higher parental education are associated with less youth smoking (Karlsen et al., 1998; LeMaster et al., 2002; Saewyc et al., 2006; Shpiegel et al., 2017; Simons-Morton & Farhat, 2010; Soteriades & DiFranza, 2003; Wen et al., 2009). Data from the RHS also show that low family socioeconomic status is a risk factor for both youth and adult smoking (FNIGC, 2016b). While the bivariate link has been established, further investigation as to whether these factors are important once other factors are considered is warranted.

### **First Nations Traditional Culture**

#### ***Historical Trauma and Culture***

Analysis of the RHS showed no statistically significant association between First Nations traditional culture and language and youth smoking behaviour (FNIGC, 2016b), although youth who frequently participate in cultural events are less likely to report smoking than those who never participate. By examining the relationship between identifying as Indigenous, historical trauma, stressful life events, and smoking tobacco, Soto et al. (2015) identified a correlation with tobacco use and experiences of historical trauma and stressful life events. Indigenous identity and cultural participation were identified as protective factors. While cultural participation did not predict tobacco smoking behaviours, tobacco may be used as a coping mechanism to deal with intergenerational and vicarious trauma.

There are several potential protective and risk factors that are unique to First Nations youth that also warrant further attention. Historical traumas, which include the colonial and Indian Residential School systems, have produced social, political, and economic inequalities, and these have greatly impacted the health of Indigenous people in Canada (Loppie Reading & Wien, 2009; Soto et al., 2015). Residential school attendance has created long-lasting harmful individual and intergenerational effects (Bombay et al., 2009). These negative effects include psychological health problems, and disconnection from family, community networks, culture, and language, all factors which have been found to influence potentially harmful health behaviours such as smoking tobacco (Bombay et al., 2009). Strong connections to spirituality may be a protective factor for First Nations youth as youth who placed higher importance on traditional cultural activities and understanding cultural teachings report higher levels of emotional competence, which was found to be protective against smoking tobacco (Andersson & Ledogar, 2008). A meta-analysis of Canadian Indigenous youth resilience studies did not find a clear and consistent

relationship between traditional culture, spirituality, and tobacco use (Andersson & Ledogar, 2008). Yet, the inability to link resilience with specific cultural or spiritual factors may largely reflect a “failure to ask the right questions” (Andersson & Ledogar, 2008, p. 65). The “right questions” may include knowledge about culture, such as First Nations language and rights, and the importance youth place on this knowledge.

## Methods

This article seeks to address the gaps in the literature on the smoking behaviours of First Nations youth living on reserve and in Northern communities. By drawing on the FNREEES survey, which includes detailed information about youths’ knowledge, appreciation, and involvement with their traditional First Nations culture, the relationship between traditional cultural participation and resilience to tobacco use can be more thoroughly examined. Moreover, while the FNIGC (2016b) report provides important information about a variety of factors that protect against youth tobacco smoking, it relies solely on bivariate analyses, which do not allow for an examination of the unique effects of each factor, controlling for other differences. The present article is able to build on this foundation by conducting multivariate analyses. Based on the literature on protective factors, we also draw on qualitative data from a series of interviews with First Nations managers, frontline workers, and authorities about on-reserve tobacco prevention, education, reduction, and cessation initiatives. Our mixed-method approach provides a rich analysis of the factors that promote resilience to youth smoking and allows us to explore the relationship between traditional cultural connection and resilience to a greater depth than currently exists in the literature. The FNIGC, the corresponding author on this article, established the OCAP® principles, which recognize “the rightful ownership, control, access, and possession of First Nations’ data by First Nations” (FNIGC, 2020, para. 3). The FNREEES survey data is possessed by the First Nations Data Centre and all analyses using these survey data, and the analysis of the in-depth interviews, were conducted in collaboration with the FNIGC to ensure shared control over all aspects of the research process. As a program evaluation-type review, this project did not require university research ethics board review.

## Survey Data

We use data from the FNREEES to analyze the protective and risk factors associated with youth tobacco use. FNREEES was conducted by the First Nations Information Governance Centre (FNIGC) and its Regional Partners between 2013 and 2015 and survey weights are applied to all analyses to ensure the data are representative of the population of First Nations youth living on reserve and in Northern communities across Canada. The sampling frame was based on the Indigenous and Northern Affairs Canada (INAC) Indian Registry counts of those living on reserve or on Crown land. The complex sample design incorporated a two-stage sampling strategy. The first stage involved the selection of communities, stratified by region, sub-region, and community size (large = 1,500 or more people, medium = 300 to 1,499 people, and small = fewer than 300 people) to participate in the survey. Large communities were automatically included, while medium and small communities were randomly selected with equal probability within their respective strata; communities with a population of less than 75 were not included in the survey. The second stage pertained to the random selection of individuals within 10 age and sex groups (i.e., each sex by 5 age groups) in each community in the national sample. Community members were identified using band membership lists. The FNREEES achieved obtained



responses from 69.5% of the target sample, across 243 First Nations communities (FNIGC, 2016a) and included 3,842 youth respondents. The analyses in this article uses complete case analysis of self-reported data from 1,764 youth, aged 12 to 17, drawn from the youth survey component using SPSS Version 24. Youth with missing data on any of the included factors were excluded from the analysis.

### Survey Measures

Youth smoking behaviours were measured by responses to the following question: “At the present time, do you smoke cigarettes daily, occasionally, or not at all?” Respondents who smoked less than daily were classified as occasional smokers, so this category can encompass a broad range of youth who smoke any amount ranging from a few times per week to a few times per year. Youth who reported that they smoked daily or occasionally were grouped together because of the relatively small categories compared to those who did not presently smoke. Since the survey question refers to current smoking behaviours, past smoking behaviour cannot be identified, and those who stated that they do not presently smoke may have smoked in the past.

We examined the effects of 21 protective and risk factors on youth smoking. These included self-reported gender, which was recoded dichotomously;<sup>2</sup> age, which was grouped into ages 12 to 14 and 15 to 17; education, which included a measure for whether respondents were currently in school, had completed school, or had left school without graduating at the time of the survey; and volunteer activities, which included dichotomous measures for whether the youth volunteered in the community without pay when the survey was taken.

The other health behaviours included as predictors of youth smoking were binary variables for whether the respondent drank five or more alcoholic drinks in one sitting (binge drinking), used marijuana or other illicit drugs, or misused prescription drugs in the last year. Measures for the substance-related health behaviours of the respondents’ friends included dichotomous measures for whether the youth had no friends who smoked, compared to those who reported that some, most, or all of their friends smoked. Peer drinking and peer drug use measures were created in the same way.

Family factors included dichotomous measures for whether youth lived in a smoke free home or not, whether they had ever been in foster care, and whether the respondent had any family member (mother, father, grandparent, or sibling) who attended a residential school. Family structure was classified into three categories: living with two biological parents, one biological parent, or any other family structure. A crowded home is classified as a home with more people living in it than the number of habitable rooms, and not crowded otherwise. Parental education is classified into four categories: both parents have less than a high school education, at least one parent has a high school diploma, at least one parent is educated beyond high school, and parental education is unknown.

Respondents were also asked to rate the importance of learning about traditional teachings, and their responses were coded into two categories: *not or a little important* and *very or somewhat important*. Youth’s self-reported mental health is classified into two categories consisting of *excellent, very good, or good* and *fair or poor*. Dichotomous measures for whether they participated in sports or physical

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<sup>2</sup> The survey does not provide an option to indicate a non-binary gender identity.

activities at least once per week outside of class were included. A dichotomous measure of social support was also created to capture whether respondents felt that they had someone in their lives who would help them if things went wrong.

We included a composite measure of level of mastery. Respondents were asked to rate their agreement with seven statements related to their level of mastery and sense of control over their lives on a four-point Likert scale, and their responses were averaged to create the composite measure ( $\alpha = 0.71$ ).

Finally, respondents were asked to state how often they felt in balance in four aspects of their life—physical, mental, emotional, and spiritual—on a five-point Likert scale ranging from *all of the time* to *none of the time*. Responses to these four questions were averaged to create an overall balance measure ranging from 1 to 5, with higher values signifying greater balance ( $\alpha = 0.88$ ).

### **Quantitative Analytic Strategy**

The examination of protective and risk factors for youth tobacco smoking proceeds in two steps, which were determined a priori. First, a series of bivariate cross-tabulations of the various risk and protective factors and youth tobacco smoking behaviour are estimated. Next, a multivariate logistic regression model predicting non-smoking that includes all the protective and risk factors found to be significant in the bivariate analyses is estimated to examine the unique effect of each factor. This analytic strategy allowed us to examine a very wide range of potentially protective factors in the bivariate analyses, but not overburden our final multivariate model with variables that we found not to be directly related to youth tobacco smoking.

### **Qualitative Interview Data**

To complement the FNREEES quantitative data analysis, interviews were held with key First Nations on-reserve tobacco initiative managers and frontline workers and authorities in the field of tobacco and culture (including prevention and education, reduction, and cessation;  $N = 8$ ). The majority ( $n = 6$ ) of the interviews were held after the preliminary findings of the quantitative data analysis were identified. This allowed for questions specific to these findings to guide the interviews.

The contacts for the interviews were snowball sampled, starting with the Thunderbird Partnership Foundation (TPF). The TPF's mandate is to be "the national voice advocating for Inuit and First Nations culturally-based addictions services" (Thunderbird Partnership Foundation, 2018a, Mandate section, para. 1). TPF identified two experts connected to their organization in the field of tobacco prevention, and each was contacted to identify key community-based initiatives covering each of the three areas of interest to this report (prevention, reduction, and/or cessation). The individuals interviewed ranged from program managers ( $n = 3$ ) to frontline workers ( $n = 2$ ) to topic area experts ( $n = 3$ ).

The approximate 10 reviewed initiatives variously addressed the three areas in their operations (noting limited attention to reduction). The interviews covered different areas of Canada, including rural, remote, and close to urban settings, but are in no way representative. Common amongst the interviews was a solid understanding of tobacco and its sacred and contemporary use amongst youth and/or the

role of traditional First Nations culture in individual and community health.

A 2015 report by the Canadian Partnership Against Cancer (CPAC, 2015), titled *Leading Practices in First Nations, Inuit and Métis Smoking Cessation Program Scan*, “provides information on current practices in smoking cessation programs developed by, with and for First Nations, Inuit and Métis across Canada by jurisdiction” (Slide 2). Noting it is an adult focused report, it concluded, “Relatively few smoking cessation programs developed by, with and for First Nations, Inuit, or Metis exist in Canada” (CPAC, 2015, Slide 24). The same is true for First Nations youth, including in the areas of prevention and reduction, with the exception of Health Canada-funded tobacco projects.

The following overarching questions were addressed through a structured interview:

- a. Do the protective and risk factor findings from the FNREEES analysis apply to the community programs?
- b. Are any additional protective and risk factors identified in the community programs for understanding youth tobacco smoking?
- c. What individualized (community-specific) program approaches are applied (culture, gender)?

The interview questions consisted of the following:

1. Describe the program or programs you are generally familiar with.
2. Describe “common” program participants or youth generally regarding uptake of smoking.
3. What is the cultural foundation of the program or programs generally (developed by, for, and with First Nations)?
4. What specific factors lead to reduction or cessation?
5. Do you have any additional thoughts on the key findings shared with you from preliminary analysis of the quantitative data for this report?

The average length of the interview was 35 minutes. All answers were recorded in verbatim format for select sentences and at other times in a summary format (when verbatim was not possible) by typing directly into a word processing program. All interviews were reviewed upon completion for general, overarching themes using a version of Saldaña’s (2009) content analysis coding guide. This guide was chosen based on the direct nature of the interview questions—there was not a lot of flexibility for topics to emerge from the interviews that were outside the structured interview guide. Also, as explained, the interviews were held following the quantitative data analysis, which directed the areas in which we gathered information. One researcher took the lead on the data gathering, and upon review of the data using a combined structural and descriptive coding (first cycle) and pattern coding (second cycle), the information gathered was presented back to interview participants for validation.

## Results

### Survey Results

#### *Bivariate Analyses*

Table 1 displays crosstabulations and chi-square significance tests for the protective and risk factors and youth smoking.

Overall, 76.3% of First Nations youth aged 12 to 17 report not smoking tobacco at the time of the survey, and there are no significant differences between females and males. Smoking tobacco is more common among older youth than younger youth. Youth who are currently in school are the least likely to smoke tobacco, followed by those who have finished high school, and those who have left school before graduation are the most likely to smoke. Youth who volunteer without pay in their communities are more likely to smoke tobacco than youth who do not participate in any volunteer activities.

Youth who use other illicit substances are far more likely to smoke tobacco than youth who do not. The majority of youth who report drinking five or more alcoholic beverages in one sitting also report smoking. In contrast, only 1 in 10 young people who do not binge drink report smoking tobacco. Youth who report never using marijuana, misusing prescription drugs, or using any other illicit drugs in the past year are also very unlikely to smoke tobacco.

Having friends who do not smoke tobacco, drink, or use drugs is highly protective against smoking. Nearly all youth who reported that none of their friends smoke tobacco are non-smokers themselves. A similar pattern is evident for friends' drug use, which includes marijuana, prescription misuse, and illicit drugs.

Youth smoking is also associated with a variety of family characteristics. Living in a smoke-free home is strongly associated with non-smoking among First Nations youth. Youth who live in families with two biological parents are less likely to smoke tobacco than youth who live with one biological parent, or any other family form. First Nations youth who have ever been in foster care are more likely to be smokers than youth who have never been in foster care. Family experience of residential schooling is significantly associated with youth smoking behaviours. Youth living in crowded homes are more likely to smoke than youth living in homes that are not crowded. Youth whose most highly educated parent has a high school diploma are the most likely to be non-smokers, followed by those with at least one parent who is educated beyond high school, and youth whose parents do not have a high school diploma are the most likely to smoke.

**Table 1. Sample Characteristics by Smoking Status: First Nations Youth Ages 12-17 Living on Reserve and in Northern Communities**

	Smoke	Do Not Smoke	Chi-Square Test	Total
	%	%		%
<b>Total</b>	23.7	76.3		100
<b>Gender</b>				
Female	23.3	76.7	0.11	46.0
Male	24.0	76.0	n.s.	54.0
<b>Age</b>				
12-14 years old	7.5 <sup>E</sup>	92.5	178.81	41.3
15-17 years old	35.0	65.0	***	58.7
<b>School Enrollment</b>				
In school	20.1	79.9	26.49	66.0
Completed school	24.7 <sup>E</sup>	75.3	*	6.8
Left school	32.0	68.0		27.2
<b>Volunteer Activity</b>				
Volunteer	30.0	70.0	34.02	46.7
Do not volunteer	18.1	81.9	**	53.3
<b>Alcohol Consumption</b>				
No binge drinking last year	10.4	89.6	436.01	71.8
Binge drank in last year	57.3	42.7	***	28.2
<b>Illicit Drug Use</b>				
No drug use last year	3.9 <sup>E</sup>	96.1	566.15	59.8
Any drug use last year	53.0	47.0	***	40.2
<b>Peer Smoking</b>				
No friends smoke	F	98.4	246.33	34.1
Some, most, or all friends smoke	35.1	64.9	***	65.9

**Table 1. Sample Characteristics by Smoking Status: First Nations Youth Ages 12-17 Living on Reserve and in Northern Communities (continued)**

	Smoke	Do Not Smoke	Chi- Square Test	Total
	%	%		%
<b>Peer Alcohol Consumption</b>				
No friends drink	F	88.8	97.73	39.1
Some, most, or all friends drink	31.7	68.3	**	60.9
<b>Peer Illicit Drug Use</b>				
No friends use drugs	F	92.3	192.48	43.5
Some, most, or all friends use drugs	36.0	64.0	***	56.5
<b>Home Smoking Environment</b>				
Live in a smoke-free home	20.2	79.8	19.40	62.1
Smoking in home	29.4	70.6	*	37.9
<b>Family Structure</b>				
Live with 2 biological parents	16.0	84.0	41.59	41.0
Live with 1 biological parent	30.0	70.0	**	41.8
Other family structure	26.7	73.3		17.2
<b>Foster Care Experience</b>				
Never been in foster care	22.6	77.4	12.24	92.2
Ever been in foster care	35.8	64.2	*	7.8
<b>Family Experience of Residential School</b>				
No family members attended residential school	15.7	84.3	21.78	25.8
At least one family member attended	26.5	73.5	**	74.2
<b>Home Crowding Status</b>				
Home is not crowded	20.3	79.7	18.81	63.5
Live in a crowded home	29.5	70.5	*	36.5

**Table 1. Sample Characteristics by Smoking Status: First Nations Youth Ages 12-17 Living on Reserve and in Northern Communities (continued)**

	Smoke %	Do Not Smoke %	Chi- Square Test	Total %
<b>Parental Education</b>				
Both parents less than high school	35.1	64.9	72.30 **	24.7
At least one parent high school graduate	14.7 <sup>E</sup>	85.3		23.4
At least one parent more than high school	19.2	80.8		42.3
Do not know or not applicable	35.8 <sup>E</sup>	64.2 <sup>E</sup>		9.6 <sup>E</sup>
<b>Perspective on Importance of Traditional Teachings</b>				
Traditional teachings somewhat or very important	25.8	74.2	17.28 **	79.2
Not or a little important	15.5	84.5		20.8
<b>Mental Health</b>				
Excellent, very good, or good mental health	21.8	78.2	56.30 ***	94.4
Fair or poor mental health	54.9	45.1		5.6
<b>Physical Activity</b>				
Physically active once per week or more	21.3	78.7	8.45 n.s.	60.5
Physically active less than once per week	27.3	72.7		39.5
<b>Social Support</b>				
If something went wrong, no one would help me	37.5	62.5	25.10 ***	11.8
If something went wrong, someone would help me	21.8	78.2		88.2

**Table 1. Sample Characteristics by Smoking Status: First Nations Youth Ages 12-17 Living on Reserve and in Northern Communities (continued)**

	Smoke	Do Not Smoke	<i>p</i> -Level	Total
	Mean [CI]	Mean [CI]		%
<b>Balance</b>	3.8 [3.62, 3.93]	3.9 [3.80, 3.95]	n.s.	3.9
<b>Mastery</b>	2.8 [2.71, 2.87]	3.0 [2.90, 2.99]	***	2.9

*Notes.*  $N = 1,764$ . Significant differences between youth who smoke and do not smoke determined using chi-square tests for categorical variables and confidence interval estimates of means for continuous variables. E = high sampling variability, interpret with caution. F = very high sampling variability, estimates cannot be displayed. CI = confidence interval.

\*\*\*  $p < .001$  \*\*  $p < .01$  \*  $p < .05$  n.s. = non-significant differences

Youth who report that it is somewhat or very important to learn about traditional teachings are less likely to be non-smokers than those who perceive that it is only a little or not at all important to learn about traditional teachings. There are large differences in the smoking behaviours of First Nations youth based on their self-reported mental health. Youth who report excellent, very good, or good mental health are more likely to be non-smokers than those who report fair or poor mental health. However, youth who participate in physical activity once per week or more are no more or less likely to smoke tobacco than youth who are less physically active. There are also large differences between youth who feel like they have strong social support who are much less likely to smoke, compared to youth who do not report having strong social support. Youth who do not smoke tobacco report similar physical, mental, emotional, and spiritual balance than those who smoke. Youth who report being non-smokers report higher levels of mastery than youth who smoke.

### ***Multivariate Analyses***

In the next step of the analysis, we estimate a multivariate logistic regression model predicting non-smoking that includes gender and all of the protective factors that were found to be significant predictors of youth smoking in the bivariate analyses. As shown in Table 2, there are eight factors that are uniquely and significantly related to First Nations youth tobacco smoking. Of the factors, 10 that were found to be significant in the bivariate analyses lost significance once all the factors were considered at once (i.e., gender, peer drug use, living in a smoke-free home, living in an uncrowded home, family structure, experience in foster care, family attendance at residential school, parental education, importance placed on traditional teachings, social support, and mastery).



**Table 2. Logistic Regression Predicting Not Smoking Among First Nations Youth Ages 12-17, Living on Reserve and in Northern Communities**

	Odds Ratio	Std. Error	<i>p</i> -Level
<b>Gender</b>			
Male	1.25	0.23	n.s.
Female	<i>Ref.</i>	<i>Ref.</i>	
<b>Age</b>			
12-14 years old	2.36	0.28	**
15-17 years old	<i>Ref.</i>	<i>Ref.</i>	
<b>School Enrollment</b>			
In school	<i>Ref.</i>	<i>Ref.</i>	
Completed school	2.54	0.47	*
Left school	0.90	0.27	n.s.
<b>Volunteer Activity</b>			
Volunteer	<i>Ref.</i>	<i>Ref.</i>	
Do not volunteer	2.22	0.23	***
<b>Alcohol Consumption</b>			
No binge drinking last year	5.41	0.28	***
Binge drank last year	<i>Ref.</i>	<i>Ref.</i>	
<b>Illicit Drug Use</b>			
No drug use last year	9.39	0.36	***
Any drug use last year	<i>Ref.</i>	<i>Ref.</i>	
<b>Peer Smoking</b>			
No friends smoke	11.18	0.56	***
Some, most, or all friends smoke	<i>Ref.</i>	<i>Ref.</i>	
<b>Peer Alcohol Consumption</b>			
No friends drink	0.22	0.40	***
Some, most, or all friends drink	<i>Ref.</i>	<i>Ref.</i>	

**Table 2. Logistic Regression Predicting Not Smoking Among First Nations Youth Ages 12-17, Living on Reserve and in Northern Communities (continued)**

	Odds Ratio	Std. Error	<i>p</i> -Level
<b>Peer Illicit Drug Use</b>			
No friends use drugs	1.78	0.42	n.s.
Some, most, or all friends use drugs	<i>Ref.</i>	<i>Ref.</i>	
<b>Home Smoking Environment</b>			
Live in a smoke-free home	<i>Ref.</i>	<i>Ref.</i>	
Smoking in home	0.90	0.24	n.s.
<b>Family Structure</b>			
Live with 2 biological parents	1.18	0.30	n.s.
Live with 1 biological parent	1.15	0.36	n.s.
Other family structure	<i>Ref.</i>	<i>Ref.</i>	
<b>Foster Care Experience</b>			
Never been in foster care	1.34	0.34	n.s.
Ever been in foster care	<i>Ref.</i>	<i>Ref.</i>	
<b>Family Experience of Residential School</b>			
No family members attended residential school	0.81	0.27	n.s.
At least one family member attended	<i>Ref.</i>	<i>Ref.</i>	
<b>Home Crowding Status</b>			
Home is not crowded	1.16	0.25	n.s.
Live in a crowded home	<i>Ref.</i>	<i>Ref.</i>	
<b>Parental Education</b>			
Both parents less than high school	1.48	0.39	n.s.
At least one parent high school graduate	1.19	0.38	n.s.
At least one parent more-than-high school	<i>Ref.</i>	<i>Ref.</i>	
Do not know or not applicable	0.87	0.35	n.s.

**Table 2. Logistic Regression Predicting Not Smoking Among First Nations Youth Ages 12-17, Living on Reserve and in Northern Communities (continued)**

	Odds Ratio	Std. Error	<i>p</i> -Level
<b>Perspective on Importance of Traditional Teachings</b>			
Traditional teachings somewhat or very important	<i>Ref.</i>	<i>Ref.</i>	
Not or a little important	1.22	0.27	n.s.
<b>Mental Health</b>			
Excellent, very good, or good mental health	4.03	0.45	**
Fair or poor mental health	<i>Ref.</i>	<i>Ref.</i>	
<b>Social Support</b>			
If something went wrong, no one would help me	<i>Ref.</i>	<i>Ref.</i>	
If something went wrong, someone would help me	1.43	0.25	n.s.
<b>Level of Mastery</b>	1.52	0.29	n.s.
Nagelkerke Pseudo $R^2 = 0.611$			
Model Wald $F$ statistic = 11.87 ( $p < .001$ )			

*Notes.*  $N = 1,764$ . E = high sampling variability, interpret with caution.

\*\*\*  $p < .001$  \*\*  $p < .01$  \*  $p < .05$  n.s = non-significant differences

Age, school enrollment, volunteering, drinking and drug use, peer smoking and drinking, and self-reported mental health are all important factors predicting youth smoking in the multivariate model. Younger First Nations youth, aged 12 to 14, are 2.36 times more likely to be non-smokers compared to older First Nations youth, once the other factors are considered. Youth who have completed school are 2.54 times more likely to be non-smokers compared to those still in school, all else being equal. The odds of not smoking tobacco are 2.22 times higher for youth who do not volunteer, compared to youth volunteers. The respondent's own health behaviours, and the health behaviours of their peers are very strongly associated with smoking behaviour. Youth who did not binge drink alcohol in the past year have 5.41 times higher odds of being non-smokers, those who did not use drugs last year have 9.39 times higher odds of not smoking, and those whose friends do not smoke have odds of not smoking that are 11.18 times higher compared to their counterparts who engaged in these behaviours, controlling for other factors. Peer drug use is not significantly associated with tobacco smoking but surprisingly, peer drinking is associated with a reduced likelihood of smoking. Finally, youth who report having excellent, very good, or good mental health have odds of not smoking 3.44 times higher than those with poor or fair mental health, after controlling for other factors.

## Community Tobacco Initiatives: Results from Qualitative Interviews

There were four overarching themes across the interviews regarding tobacco initiatives for First Nations youth on reserve: absence of attention to a sex and gender lens, importance of community-specific developed programming, recognition of Indigenous social determinants of health, and normalization of cigarette smoking.

First, the interviewees relayed that a sex and/or gender lens is rarely placed on youth tobacco initiatives, including in their own communities. As one interviewee said:

None of what we do is gender specific, we are age specific only.

It was shared that if gender is recognized, it is most often specific to female adults and pregnancy. In reference to gender specific programming, an interviewee shared:

We take it outside of youth programming, and into pregnancy.

Another interviewee shared:

Do we need a gender lens? Yes we do, but the emphasis is usually on pregnancy. That is where [we] see prevention messages.

Female-specific messaging is generally that women should not smoke during pregnancy; however, the message is not typically expanded to include those in the childrearing years. There is some attention given to partners and the community in supporting women to not smoke while pregnant, but overwhelmingly public health messages are focused on the pregnant female. One interviewee reinforced that “a gender-based approach is not just about women.” This does not mean that gender-informed programming does not exist in Canada for First Nations youth on reserve, but it was generally absent in the interviews for this study. One example of the existence of such programming is the on-reserve work of the Canada Prenatal Nutrition Programs, which have the opportunity to discuss tobacco with women and use resources such as the *Sacred Tobacco, Sacred Children* (Best Start, 2012) materials about smoke free homes, produced by Best Start in Ontario.

Some interviews recognized that females are more likely to smoke in comparison to males, and for different reasons such as to address negative emotions, including both daily stressors as well as ongoing personal challenges like anxiety. Some also shared that they felt females smoked in response to what was described by one interviewee as “emotional work” taken on at an early age and tied to female gender roles (e.g., care for siblings) and non-gender-specific roles as well (e.g., planning required to keep family problems from being “found out”). Some interviewees also shared that a gender lens needs to be considered with respect to First Nations culture (e.g., recognizing the traditional role of females and tobacco in ceremonial teachings in some communities). “Culture is important, including to Indian women, and more now than ever,” shared one interviewee.

Second, recognizing that each First Nations community is unique, tobacco programs were identified by the interviewees as lacking in community specificity and focus. For example, one interviewee shared that youth smoking in the community they worked in was highly influenced by the perceived “coolness” of

smoking amongst youth, whereas, in another community in which they worked, this was not the case and youth reported to smoke for other reasons (e.g., coping). Interviewees also shared that tobacco smoking initiatives need also to be youth specific and focused. An example of a youth-centered smoking prevention campaign created by First Nations youth was identified in BC (First Nations Health Authority, 2017). Interviewees shared that, overall, there is limited empirically based youth-focused tobacco programming available to access as a starting point, and even fewer that are specific to First Nations youth. At the same time, it was suggested that there is a need for approaches to youth cigarette smoking that are:

More organic: Bring youth together and have opportunities for them to check in with one another and spontaneously share about progress they have made, like with trying to quit smoking.

Central to tobacco smoking initiatives shared by the interviewees was the need for attention to culture. This includes making the critical distinction between commercial cigarette smoking and sacred tobacco use and its linkage to cultural knowledge. One interviewee shared:

Culture is incorporated into everything we do. Start with a circle and smudging—[sharing] uses of tobacco, offering tobacco as prayers when dancing, after with the sacred fire. Start with [it in] ceremony in everything we do. We respect the tobacco in this way.

Third, the influential role of the social determinants of Indigenous health were recognized as underlying reasons for smoking. One interviewee shared:

We need to think about gender and culture together. And other determinants of health too. So much going on that we need to embrace.

According to the work of Loppie Reading and Wien (2009), “the social determinants of health can be categorized as distal (e.g., historic, political, social, and economic contexts), intermediate (e.g., community infrastructure, resources, systems, and capacities), and proximal (e.g., health behaviours, physical, and social environment)” (p. 1). The same interviewee further shared:

We need to be ready with Indigenous-specific ways of approaching—culturally safe ways of addressing tobacco that take into account all the determinants of health (gender, violence, remoteness, education). My biggest critique with the tobacco field in the past and today is still its narrow focus.

For example, the interviews identified the relationship between youth smoking and coping (e.g., depression, anxiety), and the need to address this in a larger context. Another interviewee shared:

[We] need to do larger mental health initiatives (prevention) where it is clear to the youth that if you have mental health problems, and no alternative coping skills, then you may end up smoking.

They also identified the linkage between First Nations youth on reserve smoking and inter-generational colonial processes resulting in individual and communal loss, grief, pain, and trauma, while at the same time, they recognized the sacred and beneficial cultural role of tobacco. An interviewee shared:

Culture needs to be there. It was taken. Culture in itself is a protective factor, it is identity, self-worth. Other things that lead to smoking are symptoms of addiction. Trauma, pain. So many other things, [we] need culture to heal. Need better coping mechanisms so youth don't see the need to smoke. There is a colonization linkage. [We need to] respect tobacco so then [we] won't use.

Fourth, the interviewees shared that tobacco use in most reserve communities has cultural and spiritual significance, but that the commercial use of tobacco by cigarette smoking is highly normalized, including among traditional community leaders (e.g., Elders, Sweat Lodge Keepers). Comments from the interviewees include:

No, culture [referring to cultural ceremonies] is not a protective factor for smoking. A lot of the drummers and pow wowers and sweat lodge conductors smoke—in fact, [they are] one of the largest smoking groups (may be part generational). It is still socially acceptable in that group.

Another shared:

There are cultural programs that speak about the importance of tobacco, offering it to the land, connecting to the Creator—but there is contradiction because the people smoke. We need to have Elders sharing who do not smoke. People smoke at the sweat; they smoke in the lodge. But if the Elder is there that does not smoke, they don't.

This can result in contradictory cessation program messaging for the youth. An interviewee shared:

Traditional Elders always talk about the spiritual use of tobacco. It is more powerful when a non-smoking Elder shares this though. Kids are noting the contradiction; they are even telling Elders that their [the Elders] use is not traditional use!

The general acceptance of tobacco smoking across communities was identified by the interviewees. One interviewee identified it as the “lesser of the evils, when compared to suicide or drugs” and as “an accepted means to cope.” Another shared:

They do it because it is cool, everyone in their families is doing it (it is normalized), and gangs ask them to.

Unique to some communities is commercial tobacco's commodity or value-based role and an entrenched resistance to view it otherwise. Related, commercial cigarettes were also shared as being easy to access for First Nations youth on reserve in part because of the lower cost due to taxation laws.

## Discussion

The majority—about 3 out of 4—of First Nations youth living on reserve and in Northern communities do not currently smoke tobacco but, given the significant health consequences of smoking and the

higher rate of smoking for First Nations youth living in these communities compared to other Indigenous youth (Bougie & Kohen, 2018; Elton-Marshall et al., 2011; Gionet & Roshanafshar, 2013), it is critical to understand factors that promote youth resilience against tobacco use. This is particularly important for the development of programming. Smoking tobacco is a leading cause of premature death in Canada, and as such, needs to be paid adequate attention.

We found in this study that a higher percentage of female than male youth report being daily or occasional smokers. These differences are also found in other studies of First Nations youth smoking, including the RHS study of First Nations youth living on reserve and in Northern communities. Acknowledging that the health risks of tobacco use for women and girls are higher in comparison to men and boys (Allen et al., 2014), the FNREEES and other study findings support the need to consider sex and gender when studying protective factors for tobacco smoking (Amos et al., 2012; Greaves, 1996, 2015; Greaves et al., 2016; Stewart et al., 2011). It is important to consider this alongside our finding from the interviewees that sex and gender are seldom accounted for in tobacco interventions because of a lack of awareness and knowledge by program developers. At the same time, while bivariate analyses of both FNREEES and RHS data showed a higher prevalence of smoking among females than males, the multivariate analyses in this report did not show significant sex differences once other factors are considered, suggesting that differences between males' and females' smoking are explained by the other factors considered here. Again, further research and programming attention to both sex and gender is warranted.

Our finding that smoking tobacco is more common amongst older youth to younger, with the typical age of onset between 12 and 14 years of age, is reflective of the general youth smoking literature (Cantrell et al., 2018; Kendler et al., 2013). Our interviewees highlighted their concern that education and prevention work need to be increasingly undertaken at younger ages and school grades to continue this trend. This supports the literature indicating the protective importance of delaying the age of onset of tobacco use among youth (Azagba & Asbridge, 2013; Glynn, 1989; Ryan et al., 2016).

Our full logistic regression model showed several protective factors for non-smoking amongst First Nations youth: younger youth, youth who do not volunteer in the community, youth who report having good mental health, youth who did not binge drink alcohol or use illicit drugs in the past year, and most importantly, youth who have friends who do not smoke are less likely to be smokers.

These findings coincide with the latest empirical evidence. Mental health and other addictions are strongly correlated to smoking in the empirical literature (Khaled et al., 2009; Kirst et al., 2013). Whether a youth has friends who smoke is the strongest predictor of youth smoking in our analysis, which is consistent with past research which finds that peer associations are highly influential, including smoking (Albert et al., 2013; Hutchison et al., 2008). More complex statistical analyses, including longitudinal measures following smoking behaviour and the behaviour of peers over time would be useful to gain even further understanding of how unhealthy behaviours may spread across social networks. The strong protective influence of having friends who do not smoke suggests that efforts to reduce youth smoking may reverberate through friendship networks, which is particularly promising.

At the same time, we can consider this finding alongside the interviewees reporting that there is an absence of First Nations youth-specific, empirical-based tobacco initiatives that consider other

substances. This is not reflective of the current addiction literature supporting a holistic approach to addressing addiction (i.e., accounting for multiple substance use; Dell et al., 2011). The research evidence also suggests that mental health approaches need to encompass a broad understanding of wellness, as shared by the interviewees as important for programming—for example, accounting for Indigenous social determinants of health, ranging from economic status through to cultural identity (Rowan et al., 2014). The interviewees shared that prevention initiatives currently highlight general education about the harms of non-sacred tobacco use, with specific attention to the importance of peer-to-peer programming. Taking this further, it was noted that there was nearly no attention paid to tobacco reduction, secondhand smoke, e-cigarettes and vaping, marijuana use, and chewing tobacco. The harm reduction literature supports their incorporation (e.g., Cox & Dawkins, 2018; Fisher et al., 2019; Holitzki et al., 2017; Notley et al., 2018).

One of the most interesting findings in our analysis of the FNREEES is that the importance youth place on traditional culture was not identified as a protective factor,<sup>3</sup> which is somewhat at odds with the interviewee data. There are many possible explanations for this discrepancy. First, as mentioned by the interviewees, tobacco smoking (both sacred or cultural and commercial) is highly normalized in some communities, including at First Nations cultural activities and amongst cultural leaders (Cote-Meek et al., 2014). This may influence youth tobacco smoking uptake and continuation through role modelling. This may also explain the association between volunteering in the community and tobacco smoking; youth who volunteer may have more exposure to adults who smoke, thus normalizing the behaviour. Likewise, youth who live with people who smoke in the home are also more likely to smoke for these reasons. This suggests that efforts to reduce adult smoking may create positive change for youth as well.

Another reason for the unexpected lack of relationship between traditional culture and smoking may be that the questions asked on the FNREEES regarding culture are not capturing the aspects of traditional culture that are protective against youth tobacco smoking. For example, the Native Wellness Assessment<sup>®</sup> (NWA) “measures the impact of cultural interventions on client wellness and proves something that First Nations have long known: culture is the key to restoring and maintaining wellness” (TPF, 2018b, para. 5). Instead of a Western-influenced questionnaire, the questions in this NWA reflect Indigenous knowledge. Illustrations of questions include: “Ceremonies and cultural activities open me up to share my thoughts and feelings with others.” “The more I learn about my culture, the more confident I feel about my life.” and “I listen to traditional teachings to learn how my ancestors understood and lived life” (TPF, 2015, pp. 4, 6).

The literature speaks to the need to further look at current youth Indigenous identity, and that it may be necessary to combine Indigenous and Western worldviews (Dell et al., 2011; Hall et al., 2015). In general, there is a need for First Nations youth to know their cultural background and participate in ceremony: The interviewees shared that this is well established within communities and not specific to youth who smoke.

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<sup>3</sup> We examined a variety of traditional cultural and language knowledge and involvement and found very few significant relationships (results available upon request).



Much of the programming that has been developed for First Nations youth in addictions and mental health generally has been grounded in Eurocentric models of risk and resiliency. It is well established that solutions to problematic substance use among First Nations youth need to be culturally specific and rooted in Indigenous and Western ways of knowing, with priority given to the former. The First Nations Mental Wellness Continuum Framework recognizes the balance of mental, physical, spiritual, and emotional wellness factors in First Nations communities in the offering of mental health and addictions programming (Health Canada & Assembly of First Nations, 2015). With this understanding, it may be worth considering whether it is possibly overreaching to suggest that participation in culture by itself is going to impact youths' smoking behaviors as a single outcome. If wellness is understood as a holistic concept, that is, from a First Nations worldview, then it may not make sense to separate smoking behaviors from other health behaviors. Further, examining the wellbeing factors together in any analysis may be important; for example, creating a composite that tackles cultural engagement by combining the variables in such a way that they assess the same underlying domain to create a more meaningful variable (as opposed to looking at the questions in isolation). There is a need to account for Indigenous and Western ways of knowing, with priority given to the former as it is inherently strengths-based, in place of the typical deficit-based Western Eurocentric model.

This strengths-based Indigenous model and the guidance offered by the TRC makes it clear that there is an important opportunity that needs to be recognized in a range of Indigenous-specific activities, including the findings of this study. According to the TRC (2015a), "reconciliation is about establishing and maintaining a mutually respectful relationship between Indigenous and non-Indigenous peoples in this country. In order for that to happen, there has to be awareness of the past, acknowledgement of the harm that has been inflicted, atonement for the causes, and action to change behavior" (pp. 6-7). It is important to have data, both quantitative and qualitative, to guide such action. The findings from this study can support this effort, with guidance offered specifically by Calls to Action 18 and 19.<sup>4</sup> The findings can also be linked with other Canadian initiatives, such as the renewed Federal Tobacco Control Strategy that "support the development and implementation of comprehensive tobacco control projects that are holistic, and socially and culturally appropriate" (Health Canada, 2017, p. 13).

This study has several limitations. The most apparent is working within the confines of the available quantitative data from the FNREEES. There are likely other factors that protect First Nations youth

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<sup>4</sup>Truth and Reconciliation Commission Call to Action #18:

We call upon the federal, provincial, territorial, and Aboriginal governments to acknowledge that the current state of Aboriginal health in Canada is a direct result of previous Canadian government policies, including residential schools, and to recognize and implement the health-care rights of Aboriginal people as identified in international law, constitutional law, and under the Treaties.

Truth and Reconciliation Commission Call to Action #19:

We call upon the federal government, in consultation with Aboriginal peoples, to establish measurable goals to identify and close the gaps in health outcomes between Aboriginal and non-Aboriginal communities, and to publish annual progress reports and assess long-term trends. Such efforts would focus on indicators such as: infant mortality, maternal health, suicide, mental health, addictions, life expectancy, birth rates, infant and child health issues, chronic diseases, illness and injury incidence, and the availability of appropriate health services (Truth and Reconciliation Commission of Canada, 2015b, pp. 2-3).

from tobacco use that cannot be included in the present study, such as household income, because these measures are not available. Although the FNREEES was created and conducted by the First Nations Information Governance Centre under the OCAP<sup>®</sup> principals of First Nations' ownership, control, access, and possession of data, the Indigenous community members from the tobacco programs interviewed for this study were not involved in the construction of the interview questions. This would have been useful given the diverse content of the eventual interviews, even though the primary aim was to gain insight on the FNREEES data analyses. Third, we have not addressed the neurobiology of addiction, including tobacco smoking, in this study, which should be explored in community youth tobacco smoking prevention, reduction, and/or cessation programming. Fourth, the FNREEES is a cross-sectional survey that asks youth questions specific to their current and not past smoking behaviours, limiting our ability to make causal claims. Further, it would be interesting and important to examine smoking behaviours over time, which is not possible with the present data. Finally, the qualitative interviews were with a select sample of key contacts for First Nations on-reserve tobacco prevention, education, reduction, and cessation initiatives and so are not generalizable, but are nevertheless helpful in understanding anti-smoking initiatives.

### Conclusion

Smoking tobacco is a leading cause of premature death in First Nations in Canada. This article focused on factors associated with resilience to tobacco smoking amongst First Nations youth (ages 12-17) living in First Nations communities. We concluded that not using other substances, and especially having friends who do not smoke or use other substances, not volunteering in the community, and having good mental health is associated with not smoking. Our mixed-method approach allowed us to explore the relationship between traditional cultural connection and youth non-smoking behaviors. It is critical that the factors that promote youth resilience against tobacco use be understood, so evidence-based and culturally and community specific programming can be implemented.

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