Cigarette Smoking, Mental Health and Social Support

Data from a Northwestern First Nation

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ABSTRACT

Background: The prevalence of smoking is high in many Aboriginal Canadian communities; rates of 50% are not uncommon. Aboriginal Canadians suffer a severe burden of smoking-related disease. Research in other populations has linked depression and smoking. It is not known whether mental health or affective measures are related to smoking for any of Canada's First Nations, and this study sought to answer this question. Understanding relations between affect and smoking behaviour is requisite to mounting anti-smoking interventions.

Methods: Smoking status and psychosocial measures including depression, mastery, affect balance and social support were obtained in a community-based chronic disease survey for a rural Interior Salishan First Nation in British Columbia (Plateau area). Persons surveyed were on-reserve residents (n=187), overweight (body mass index ≥ 25 kg/m²), with mean age of 44.1 years (standard deviation 15.0).

Results: The prevalence of smoking was 48.1%. Adjusted for age, sex and body mass index, smokers relative to nonsmokers had higher (p<0.010) depression (mean 21.3 [CI 95%, 19.1–23.4] vs. 16.1 [14.1–18.0]) and negative affect (18.6 [14.9–22.3] vs. 11.0 [7.6–14.4]), and lower mastery (36.4 [35.5–37.3] vs. 38.1 [37.2–38.9]). A positive relationship between mastery and social support was greater for nonsmokers (p=0.046).

Conclusion: Depression and negative affect are associated with smoking among overweight persons in a rural First Nation in British Columbia. Furthermore, smoking is inversely related to mastery, and this relation varies with social support. Longitudinal study is required to determine whether smoking influences mental health and mastery, or the reverse.

La traduction du résumé se trouve à la fin de l'article.

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Smoking rates tend to be high for minority populations, especially so for Native Americans (a term which includes Canadian Aboriginals or First Nations, and American Indians and Alaska Natives¹). In Canada, the prevalence of smoking among First Nations and Inuit peoples is 62%, twice that of the non-Aboriginal population.² In the U.S., the representative 1998 National Health Interview Survey found the prevalence of smoking was highest for American Indians and Alaska Natives (40%), in contrast to rates of 25% for non-Hispanic whites and blacks separately.³

Smoking has been widely linked to poor mental health, low perceived control and limited social support.⁴ Studies of diverse populations have reported a high prevalence of depression or depressive affect among smokers.⁵⁻⁷ It is unclear whether depression is causally related to smoking, or if the reverse is true.^{8,9} Depressive symptoms are positively correlated with stress and inversely correlated with mastery¹⁰ – the extent to which people feel in control of the forces that affect their lives – and mastery is negatively related to smoking.¹¹ A broad literature attests to the role of social support as an intermediate link between “stress” and health.¹²⁻¹⁶ Smoking is inversely related to,¹⁷ and cessation is predicted by,¹⁸ social support.

Given the high prevalence of smoking among Canada's First Nations, it is important to understand whether relations between psychosocial factors and smoking in other populations apply also to First Nations. Such information is necessary to inform culturally appropriate anti-smoking interventions. Minimal research has been published, however, on psychosocial factors in Native American populations, and none has addressed smoking behaviour. This study sought to assess relations between depression, mastery, social support and smoking in a northwestern First Nation in rural British Columbia.

METHODS

Persons surveyed were volunteers for a community-based diabetes/cardiovascular disease risk factor screening initiative¹⁹ among on-reserve First Nation (Interior Salishan) people in the rural Okanagan region of British Columbia (Plateau area). Minors less than 18 years of age were

excluded from screening. Participants gave their informed consent; ethics review was approved by the University of British Columbia. Fifty-seven percent of eligible persons ($n=198$) identified from community health records (overweight, body mass index ≥ 25 kg/m²) participated in the survey. The primary reason for non-participation was lack of interest. Male gender and age <30 years were the chief correlates of non-participation.

Smoking behaviour

Smoking status was assessed by questionnaire. Smokers were defined as individuals engaging in daily smoking. All but six persons reporting daily smoking smoked ≥ 8 cigarettes/day. The 6 individuals smoking <8 cigarettes/day had a daily consumption of 0.5-2 cigarettes, and were excluded from analysis. Nonsmokers included persons who had never smoked and former smokers who had quit smoking ≥ 5 years before the survey. Five former smokers who had quit smoking <5 years before the survey were excluded from analysis on the basis that they did not qualify as "nonsmokers." Former smokers accounted for 30 (30.9%) of 97 nonsmokers.

Psychosocial measures

Psychosocial measures were chosen for their brevity, use in divergent populations, and known reliability and validity. Measures were pre-tested with 20 community members not in the survey.

Mastery was measured using Pearlin's 7-item, 5-point Likert scale²⁰ (part of the Canadian Population Health Survey), for which construct validity has been confirmed.²¹ Respondents rate their agreement on seven statements such as, for example, "I can do just about anything I really set my mind to." Cronbach's α was 0.81, and 4-week test-retest stability was 0.66.

Depression was assessed via the 4-item Likert-type Brief Screen for Depression (BSD), for which concurrent and predictive validity have been demonstrated with criterion measures of depression and demoralization.^{22,23} Respondents answer four questions such as, for example, "During the last week, how often have you had thoughts of hopelessness or helplessness?" Cronbach's α was 0.87, and test-retest stability was 0.64.

Positive and *negative affect* were assessed via the 10-item Affect Balance Scale,²⁴

TABLE I

Characteristics According to Smoking Status Among Participants in a Community-based Chronic Disease Survey in a Rural First Nation in British Columbia

	Smokers (n=90)	Nonsmokers (n=97)	All (pooled) (n=187)
	Mean (95% confidence interval)*		
Age (years)	39.1 (36.3 – 42.0)	48.7 (45.8 – 51.7)	44.1 (42.0 – 46.3)
Gender (%)			
males	30.0 (21.2 – 40.0)	36.1 (27.0 – 46.0)	33.2 (26.7 – 40.1)
females	70.0 (59.9 – 78.8)	63.9 (54.0 – 73.0)	66.8 (59.9 – 73.3)
Body mass index (kg/m ²)	27.6 (26.3 – 28.9)	29.8 (28.7 – 30.9)	28.7 (27.9 – 29.6)
High school graduation (%)	38.6 (28.9 – 49.1)	34.7 (25.7 – 44.7)	36.6 (29.9 – 43.8)
Married or partnered (%)	62.1 (51.6 – 71.8)	60.0 (49.9 – 69.5)	61.0 (53.7 – 67.9)
Physical activity (MET-h/wk)†	10.6 (8.3 – 13.0)	10.1 (7.5 – 12.7)	10.4 (8.6 – 12.2)

* Exact mid-p confidence interval given for proportions

† Combined leisure-time and occupational physical activity given as metabolic equivalent (MET) hours per week

TABLE II

Intercorrelations Between Psychosocial Measures for Smokers and Nonsmokers in a Rural First Nation in British Columbia (n=187)

	Mastery	Depression	Positive Affect	Negative Affect
Mastery	1.00	-0.38	0.41	-0.39
Depression	-0.38	1.00	-0.27	0.57
Positive affect	0.41	-0.27	1.00	-0.29
Negative affect	-0.39	0.57	-0.29	1.00

TABLE III

Psychosocial Measures for Smokers and Nonsmokers in a Rural First Nation in British Columbia (n=187)*

	Smokers (n=90)		Nonsmokers (n=97)		p-value
	Mean	95% CI†	Mean	95% CI†	
Depression‡	21.3	19.1 – 23.4	16.1	14.1 – 18.0	0.001
Mastery§	36.4	35.5 – 37.3	38.1	37.2 – 38.9	0.010
Positive affect§	38.8	35.7 – 42.0	40.3	37.4 – 43.2	0.514
Negative affect§	18.6	14.9 – 22.3	11.0	7.6 – 14.4	0.003

* Adjusted for age, gender, social support and body mass index

† 95% confidence interval

‡ maximum = 50, high score = high affect (25 and greater may indicate major depression)

§ maximum = 50 (score out of 5, multiplied by 10), high score = high affect

which has been widely used in Canadian health surveys.²⁵ The concurrent validity of the measures has been confirmed by several studies.²⁶⁻²⁸ Respondents check 'yes' or 'no' to five positive and five negative questions, scored separately, for which an example is, "During the last few weeks, did you ever feel particularly excited or interested in something?" For positive and negative affect, respectively, Cronbach's α was 0.44 and 0.72, and test-retest stability was 0.51 and 0.57.

Social support was appraised using the questions: (a) "Among your friends and relatives, excluding your partner, if you have one, how many people do you feel you can tell just about anything to, people you can count on for understanding and advice?"; and (b) "If you live with a partner, is your partner someone you can really talk with about things that are important?"

²¹ These two questions, which focus on emotional rather than instrumental sup-

port, were scored differently. The first question was scored from 0-2, depending on whether respondents indicated nobody, one person, or two or more. The second question was scored either 0 for a negative response, or 1 for a positive response. Scores for partnered people from the second question were added to their scores from the first question. Responses ranged from 1-3; no respondent without a partner was without at least one support, nor was any respondent without any support also without a partner.

Statistical analysis

Complete data were available for 198 persons, however data from 11 individuals were excluded (see Smoking Status), therefore data from 187 individuals were analyzed according to smoking behaviour. The hypotheses that mastery, depression, and positive or negative affect vary by smoking status classification, and that relations

TABLE IV

Psychosocial Measures According to Level of Social Support for a Rural First Nation in British Columbia (n=187)*

	Level of Social Emotional Support							p-value
	Partnered or One Support (n=25)		Partnered and One Support (n=91)		Partnered and Two or More Supports (n=71)			
	Mean	95% CI†	Mean	95% CI†	Mean	95% CI†		
Depression‡	19.4	16.1–22.7	18.1	16.2–20.1	18.5	16.5–20.5	0.809	
Mastery§	36.4	34.7–38.1	36.8	35.9–37.7	38.7	37.7–39.7	0.012	
Positive affect§	39.7	34.9–44.6	38.8	35.9–41.7	40.2	37.2–43.1	0.794	
Negative affect§	20.0	14.9–25.1	13.8	10.8–16.8	10.6	7.5–13.7	0.016	

* Adjusted for age, gender, smoking status and body mass index

† 95% confidence interval

‡ maximum = 50, high score = high affect (25 and greater may indicate major depression)

§ maximum = 50 (score out of 5, multiplied by 10), high score = high affect

Figure 1. Mean mastery scores according to level of emotional social support and smoking status in a Northwestern First Nation (p=0.046)

between psychosocial measures and smoking differ according to social support, were assessed by linear regression models. Psychosocial measures were specified as dependent. Models included as predictors smoking status, social support (an ordinal variable), and a smoking by social support interaction term. All models adjust for age, sex and BMI, entered in that order, before smoking and social support. Relations involving smoking may differ between genders,²⁹ but evidence of sex effects was not apparent in our analyses. Education and marital status were specified as covariates in pilot analyses, but were deleted from final models to conserve power, as neither was related to the dependent variables. Former smokers were originally modelled separately from nonsmokers and current smokers, but were pooled with nonsmok-

ers for final analyses, given lesser numbers and a lack of differences between nonsmokers on descriptive variables and in relationships with psychosocial variables. Alpha was set at 0.05. SPSS (9.0) was used for analyses.

RESULTS

Participant characteristics

Participants (n=187) ranged in age from 18–80 years, with the mean (standard deviation (SD)) 44.4 (14.8) years. Mean age and the distribution of age did not differ between genders. The prevalence of cigarette smoking (95% confidence interval) was 48.1% (41.0–55.3%); smokers consumed an average of 14.3 (range: 8–30) cigarettes/day. Relative to nonsmokers, smokers were 10 years younger (p<0.001)

with lower mean BMI by 2.2 kg/m² (p=0.010) (Table I). The distribution of gender did not differ between smokers and nonsmokers. Nonsmokers did not differ from smokers in proportions partnered or married, or graduated from high school.

Psychosocial outcomes

Intercorrelations between psychosocial measures were low to moderate (Table II). Mastery was positively correlated with positive affect. Depression and negative affect were positively correlated, and inversely correlated with mastery and positive affect.

Mastery was lower and depression and negative affect were greater for smokers (Table III). Positive affect did not vary with smoking status, and suffered limited psychometric utility.

Depression and positive affect did not vary according to level of social support (Table IV). Differences were found between level of social support and mastery and negative affect, with a positive linear trend to greater mastery with increasing social support, and an inverse trend to lessening negative affect with increasing social support.

Smoking interacted with social support in relation to mastery (p=0.046) (Figure 1). A positive relation between social support and mastery was lower for smokers. Smoking status did not interact with social support in relation to positive or negative affect, or depression.

DISCUSSION

The results of this study pertain to a non-randomly selected convenience sample of overweight residents for a single First Nation in south-central British Columbia, in which smokers engaged in moderate-to-heavy smoking. For the survey sample, the prevalence of cigarette smoking was 48.1%, less than the national prevalence of smoking (62%) for First Nation and Inuit peoples.² This study is aligned with reports from other populations of relationships between smoking and depression,^{5–9} mastery,¹¹ negative affect,^{30,31} and social support.¹⁷ It extends these results to a rural First Nation. The finding that mental health and control are associated with smoking has not previously been reported for a Native American population in Canada or the United States. Such results

are consistent, however, with a growing body of empirical research which attests to a connection between social disadvantage, low control, risk behaviour and morbidity.^{12,32-36}

Control, variously operationalized as mastery,²⁰ locus of control,³⁷ or self-efficacy,³⁸ has emerged as an integrating concept in health research³⁹ and as a key psychosocial resource in the aetiology of health and disease.⁴⁰ In this study, smokers perceived less mastery (control), and greater depression and more negative affect in their lives, than did nonsmokers (Table III). Independent of smoking, respondents who reported higher mastery had less depression and negative affect, with significant trends to higher mastery and lower negative affect with greater emotional support (Table IV). The causal direction of these relations has yet to be established, but the results support accounting for perceived control and mental health as factors related to smoking behaviour. It is well established that attitudes and beliefs predispose behaviour, and that social conditioning of attitudes and environmental cues act to reinforce and enable health-related behaviour.⁴¹ The hypothesis remains to be evaluated, however, that anti-smoking interventions enabling smokers to feel control and support in their lives may have utility.⁴²

Smokers have been reported to perceive greater exposure to, and intensity of, "stress" than nonsmokers,^{7,43,44} and smoking is a way of coping with stress related to disadvantage.^{45,46} While daily hassles or acute or chronic stress were not measured for the First Nation surveyed in this study, the high prevalence of daily smoking may be an indicator of psychosocial distress. Difficulties in defining and measuring "stress" and the lesser importance traditionally granted to psychosocial issues preclude reliable estimates of the prevalence of "stress" for any First Nation. Nevertheless, collective psychological distress evidenced by aggregated measures of negative well-being and depression is a compelling indicator of social disadvantage.^{47,48} Moreover, social disadvantage and disorder are related to powerlessness which is itself *not* ameliorated by social ties.⁴⁷ Hence, a cognitive emphasis on changing personal behaviour and accounting for mental health, perceived control and social support as factors related to behaviour, may be necessary but

not sufficient to achieve major reductions in smoking in First Nations.

Smoking behaviour^{49,50} and mental health^{16,51} have been shown for other populations to be strongly influenced by contextual factors (e.g., the social or physical characteristics of places) and macro-social influences (e.g., institutionalized arrangements, formal or informal, upholding inequality in the resources and opportunities afforded a particular population group). The mental health of First Nations is increasingly viewed as a function of social disadvantage.^{52,53} Enabling changes which account for the socio-structural embedding of mental health,^{51,54} and smoking as a potential coping strategy,^{45,46} may be needed at the community level in support of interventions targeting individual change in smoking behaviour.

Limitations of this study include its cross-sectional nature, which precludes determination of causality and the temporal direction of the relations assessed. The protocol did not include a measure of stressful life events, which may have provided an explanation for effect modification by social support of the association between smoking and mastery. The sample size, however, was too small to detect a four-way interaction effect, and it is possible that the study may suffer Type II error for some of the relations assessed. The sample may not be representative of the First Nation surveyed; selection bias may limit the generalizability of the results. Information bias, in terms of the validity of the instruments, is unlikely given the results of psychometric evaluation. Misclassification bias, in terms of nonsmokers including both never and former smokers, is not a strong possibility given the criterion of a five-year interval between cessation and qualifying as a nonsmoker, and statistical tests indicating no differences between never and former smokers in descriptive and outcome variables. Despite the study's cross-sectional nature and potential lack of representativeness, few data have been reported on psychosocial status in First Nations, and this report provides an incentive for more comprehensive surveys of representative samples.

For the northwestern First Nation surveyed in this study, the high prevalence of smoking can be characterized in terms of underlying relationships between smoking

and negative affect, depression and low mastery.

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RÉSUMÉ

Contexte : Le tabagisme est très répandu dans de nombreuses communautés autochtones du Canada; des taux de 50 % ne sont pas rares, et les Autochtones du Canada souffrent beaucoup de maladies liées au tabagisme. Les recherches menées auprès d'autres populations ont établi un lien entre la dépression et le tabagisme. Par ailleurs, on ne sait pas si le tabagisme a une incidence sur la santé mentale ou émotionnelle des Autochtones du Canada. La compréhension des liens entre l'affect et le statut de fumeur est un important préalable à l'élaboration d'interventions visant la réduction du tabagisme.

Méthode : Une enquête au niveau communautaire sur les maladies chroniques d'une population rurale autochtone de la Colombie-Britannique a fourni des données sur le statut de fumeur/non-fumeur et sur des caractéristiques psychosociales incluant la dépression, la maîtrise de sa situation, l'équilibre émotif et le soutien social. Les participants de l'étude étaient des Indiens inscrits vivant dans une réserve (n=187), 67 % étant des femmes, et l'âge moyen était de 44,1 ans (écart-type de 15,0).

Résultats : Le taux de tabagisme était de 48,1 %. Compte tenu de l'âge, du sexe et de l'indice de masse corporelle, les fumeurs, comparativement aux non-fumeurs présentaient des taux plus élevés (p<0,010) de dépression (21,3 [19,1-23,4] c. 16,1 [14,1-18,0]) et d'affect négatif (18,6 [14,9-22,3] c. 11,0 [7,6-14,4]), et un taux moins élevé de maîtrise de sa situation (36,4 [35,5-37,3] c. 38,1 [37,2-38,9]). Une relation positive entre la maîtrise de sa situation et des niveaux supérieurs de soutien social prévalait chez les non-fumeurs (p=0,046).

Conclusion : Il existe une corrélation entre la dépression ou un affect négatif et le tabagisme chez les personnes faisant de l'embonpoint dans une population rurale autochtone de la Colombie-Britannique. De plus, le tabagisme est inversement proportionnel à la maîtrise de sa situation, et cette relation varie selon le degré de soutien social. Les efforts pour réduire le tabagisme dans la population autochtone du Canada devraient porter sur les aspects de la santé mentale, du soutien social et de la maîtrise de sa situation, en tenant compte des contextes socioculturel et historique plus larges d'où émergent les formes actuelles de style de vie.