Prevalence and Risk Indicators of Depressed Mood in On-Reserve First Nations Youth

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ABSTRACT

Objectives: The first objective was to determine the prevalence of depressive mood in First Nations youth in school grades 5 through 8 in seven on-reserve communities. The second objective was to determine the unadjusted and adjusted risk indicators associated with depressed mood in these youth.

Methods: Students in grades 5 through 8 in the seven reserve communities of the Saskatoon Tribal Council were asked to complete a paper and pencil, comprehensive youth health survey in May 2010. An eight-stage consent protocol was followed prior to participation.

Results: Out of 271 students eligible to participate, 204 youth completed the survey for a response rate of 75.3%.

Using the Center for Epidemiological Studies of Depression scale, 25% of the youth had moderate depressive symptoms. After cross-tabulation, 1 socio-economic variable, 10 social variables, 3 social support variables, 1 self-esteem variable, 5 parental relationship variables and 3 bullying variables were associated with depressed mood.

Logistic regression was used to determine four independent risk indicators associated with having depressed mood in First Nations youth, including: 1) not having worked through things that happened during childhood, 2) not having someone who shows love and affection, 3) having a lot of arguments with parents and 4) being physically bullied at least once per week.

Conclusions: Our study found high rates of depressed mood in on-reserve First Nations youth. These youth are now at increased risk for problems later in life unless successful interventions can be implemented.

Key words: Risk factors; depression; minority groups

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

Can J Public Health 2011;102(4):258-63.

The Canadian Community Health Survey (CCHS 1.1 and 2.1) from Statistics Canada found that 7.1% of the Canadian population aged 12 and over likely had a major depressive episode in the previous 12 months, in comparison to 13.2% of the self-declared Aboriginal population.¹ There are two limitations worth noting. First, the CCHS excludes anyone living on an Indian reserve in Canada and, as such, the results can only be generalized to the off-reserve population.² Second, data from the CCHS are too limited to examine specific subgroups, such as the Aboriginal adolescent population.³

Based on a literature review on the mental health of Aboriginal people, most studies determine prevalence of mood disorder through health service utilization data, and those data are flawed because many Aboriginal people do not seek professional treatment. The authors conclude there have only been two epidemiological studies reviewing psychiatric prevalence rates among Aboriginal people in Canada, and neither of these two studies included youth.⁴ Additionally, both studies used brief, non-validated measures and, as such, the results can only be interpreted as crude estimates of general distress.

As an example of crude estimates, the First Nations Regional Longitudinal Health Survey has national data on First Nations youth aged 12 to 18, but the measure to assess depressed mood was a single question asking if youth felt sad, blue or depressed for two weeks in a row in the previous 12 months.⁵ From this survey, 27.2% of youth reported that they had.

In regard to health services data, information on depressed mood does not exist for First Nations youth. However, a report from Health Canada concluded that suicide accounted for 22% of all deaths among First Nations youth aged 10-19 years old in Canada in the year 2000.⁶ In that year, the suicide rate among First Nations youth was 24.1 per 100,000 population, in comparison to the national average of 13.2.

One study from Saskatoon, Canada compared the prevalence of depressed mood in urban, off-reserve Aboriginal (First Nations and Métis) youth aged 10-15 years old versus in Caucasian youth. Using a validated tool with a sample size of 4,093 youth, it was found that 8.9% of Caucasian youth had depressed mood in comparison to 21.6% of Aboriginal youth.⁷

Due to limited data, the first objective of our study was to determine the prevalence of depressed mood in First Nations youth in grades 5 through 8 (aged 10-16 years) in the seven reserve communities that constitute the Saskatoon Tribal Council (STC). The

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Acknowledgements: We thank the leaders, teachers, parents and children in the seven reserve communities within the Saskatoon Tribal Council. This research was paid for by a grant from the Public Health Agency of Canada.

Conflict of Interest: None to declare.

Table 1. Depressed Mood by Demographics and SES⁹

Demographics and SES	Depressed Mood Prevalence	P-value
Age (Years)		0.491
10	26.3%	
11-12	22.8%	
13-16	32.1%	
Gender		0.673
Male	25.3%	
Female	28.0%	
Father is employed		0.210
Yes	23.8%	
No	32.4%	
Father's occupation		0.610
Professional (manager or employment requiring degree)	14.3%	
Non-professional	24.4%	
Unemployed	32.9%	
Mother is employed		0.779
Yes	26.7%	
No	28.6%	
Mother's occupation		0.909
Professional (manager or employment requiring degree)	22.7%	
Non-professional	24.6%	
Unemployed	28.9%	
Who do you live with?		0.368
Both mother and father	27.7%	
Mother only	23.7%	
Father only	41.7%	
Half with mother, half with father	50.0%	
Guardian	19.5%	
Other	33.3%	
During the past 30 days, how often did you go hungry because there was not enough food?		0.023
Always	60.0%	
Most of the time	50.0%	
Some of the time	36.6%	
Rarely	34.5%	
Never	18.7%	

second objective was to determine the unadjusted and adjusted risk indicators associated with depressed mood in on-reserve First Nations youth.

METHODS

STC consists of seven on-reserve First Nations communities within 250 kilometres of the city of Saskatoon, Canada. Based on the 2006 census, the median income per household is \$8,572, the percentage of adults who receive all of their income from government transfers is 37.1%, the percentage of lone-parent families is 26.3%, the high school graduation rate among adults is 50.7% and the adult unemployment rate is 27.5% for men and 20.7% for women.⁸

The research project was led by the Saskatoon Tribal Council with assistance from the School of Public Health and the departments of Psychiatry and Pediatrics at the University of Saskatchewan.

Students in grades 5 through 8 within STC were asked to complete a youth health survey in May 2010. It should be noted that of the seven schools, only four schools had grade 8 students. Among the seven schools, 271 students were eligible to participate. Based on consultation with the Acting Director of Education at STC, the true population is 274 so the attendance rate for these middle schools is 98.9%.

Prior to conducting the study, the Chief, Band Councilors, and Health Directors from each of the seven First Nation communities, as well as the Education Director, had to give written consent to proceed. The principal of each school and the teacher of each classroom had to give verbal consent. Additionally, each parent and each youth participant had to give written, informed consent prior to the youth's participation in the survey. Ethics approval was obtained from the University of Saskatchewan Behavioural Research Ethics Board (BEH#10-14).

Table 2. Depressed Mood by Reasons^{12,13}

When I am depressed (or sad) it is because...	Depressed Mood Prevalence	P-value
I don't feel loved		0.000
Definitely not a reason	9.8%	
Probably not a reason	37.2%	
Probably a reason	51.4%	
Definitely a reason	50.0%	
My family treats me poorly		0.000
Definitely not a reason	10.2%	
Probably not a reason	47.4%	
Probably a reason	50.0%	
Definitely a reason	64.7%	
Other people isolate me		0.000
Definitely not a reason	12.8%	
Probably not a reason	37.0%	
Probably a reason	46.7%	
Definitely a reason	47.0%	
Other certain things happened to me as a child		0.000
Definitely not a reason	5.6%	
Probably not a reason	28.6%	
Probably a reason	42.3%	
Definitely a reason	53.8%	
Other people criticize me		0.000
Definitely not a reason	15.5%	
Probably not a reason	27.3%	
Probably a reason	39.0%	
Definitely a reason	62.5%	
I haven't worked through things that happened to me as a child		0.000
Definitely not a reason	18.6%	
Probably not a reason	22.5%	
Probably a reason	41.3%	
Definitely a reason	60.0%	
I've had a difficult childhood		0.001
Definitely not a reason	16.9%	
Probably not a reason	42.5%	
Probably a reason	25.0%	
Definitely a reason	52.6%	
I can't make friends		0.014
Definitely not a reason	20.3%	
Probably not a reason	46.7%	
Probably a reason	38.9%	
Definitely a reason	38.5%	
People treat me poorly		0.010
Definitely not a reason	18.3%	
Probably not a reason	36.6%	
Probably a reason	38.1%	
Definitely a reason	50.0%	
People don't give me the respect I deserve		0.000
Definitely not a reason	12.1%	
Probably not a reason	38.9%	
Probably a reason	26.9%	
Definitely a reason	53.1%	

Questions on demographics and socio-economic status were taken from Statistics Canada's National Longitudinal Survey of Children and Youth (NLSCY). This comprehensive health survey was designed to collect information about factors that influence a youth's social, emotional and behavioural development. The NLSCY has been validated for youth aged 10 to 13 years old.⁹

The instrument used to measure depressed mood was the Center for Epidemiological Studies Depression Scale.¹⁰ This scale has good internal consistency and content validity with a Cronbach's alpha of .85.^{11,12} The scale questions mood within the last seven days, to which the participant answers with one of the following responses: rarely or none of the time (less than 1 day), some or a little of the time (1 to 2 days), occasionally or a moderate amount of the time (3 to 4 days), or most or all of the time (5 to 7 days). A summary score of 16 or higher is traditionally used as the cut-off for depressive mood although some suggest using a cut-off of 23 or higher in order to reduce the number of false positives.¹¹

The main instrument to measure the determinants of depressed mood was the Reasons for Depression Questionnaire.¹³ This scale has nine subscales for adults; these were reduced to six and then

Table 3. Depressed Mood by Social Support, Self-esteem and Parental Relationship Variables

	Depressed Mood Prevalence	P-value
Social Support⁹		
I can count on someone when I need help		0.002
All of the time	11.8%	
Most of the time	32.8%	
Some of the time	40.6%	
Almost none of the time	38.9%	
I have someone who shows me love and affection		0.000
All of the time	15.5%	
Most of the time	30.3%	
Some of the time	50.0%	
Almost none of the time	52.6%	
I have someone I can confide in when I need to talk		0.000
All of the time	14.3%	
Most of the time	30.0%	
Some of the time	38.1%	
Almost none of the time	58.3%	
Self-esteem^{2,15}		0.000
Low self-esteem	57.1%	
Normal self-esteem	21.0%	
Parental Relationship¹⁴		
My parents understand me		0.000
Strongly agree	21.3%	
Agree	20.3%	
Neither agree nor disagree	33.3%	
Disagree	72.7%	
Strongly disagree	80.0%	
I have a happy home life		0.000
Strongly agree	16.7%	
Agree	26.2%	
Neither agree nor disagree	25.9%	
Disagree	71.5%	
Strongly disagree	71.4%	
I have a lot of arguments with my parents		0.000
Strongly agree	60.0%	
Agree	44.4%	
Neither agree nor disagree	15.0%	
Disagree	22.0%	
Strongly disagree	14.3%	
There are times when I would like to leave home		0.000
Strongly agree	48.9%	
Agree	31.3%	
Neither agree nor disagree	26.1%	
Disagree	11.4%	
Strongly disagree	7.4%	
What my parents think of me is important		0.006
Strongly agree	15.7%	
Agree	36.8%	
Neither agree nor disagree	32.0%	
Disagree	37.1%	
Strongly disagree	33.3%	

five subscales for children. The subscales for children include characterological, interpersonal conflict, physical, intimacy and childhood. This instrument has demonstrated good validity for adolescent populations (.77 - .91) and reliability (.69 - .86).^{14,15}

Parenting questions came from the Parenting Relationship Scale that was used in the Health Behaviour in School-Aged Children (HBSC) study. Although validity and reliability have never been published, the scale has been used in an international project facilitated by the World Health Organization.¹⁶

Self-esteem and social support were measured using questions from the NLSCY.⁹ Questions for the self-esteem scale used in the NLSCY come from the Marsh Self Description Questionnaire, which has a coefficient alpha reliability range of .80 to .94.^{2,17}

The prevalence of being bullied was measured using the Safe School Survey which was developed by the Canadian Public Health Association and the National Crime Prevention Strategy drawn from the HBSC study used by the World Health Organization.^{18,19}

Seven questions were included from the First Nations Regional Longitudinal Health Survey on culture.⁵ These questions includ-

Table 4. Depressed Mood by Bullying Victimization^{16,17}

During the past 4 weeks, how often have you been bullied by the other students...	Depressed Mood Prevalence	P-value
Physically		0.001
Never in 4 weeks	21.1%	
Once or twice in 4 weeks	31.4%	
Every week	37.5%	
Many times a week	36.4%	
Verbally		0.145
Never in 4 weeks	18.2%	
Once or twice in 4 weeks	29.5%	
Every week	38.9%	
Many times a week	38.1%	
Socially		0.047
Never in 4 weeks	18.9%	
Once or twice in 4 weeks	31.7%	
Every week	37.5%	
Many times a week	47.1%	
Electronically		0.035
Never in 4 weeks	22.0%	
Once or twice in 4 weeks	33.3%	
Every week	40.0%	
Many times a week	42.5%	

ed: what language do you speak most often in your daily life?; Can you understand or speak a First Nations language?; List which First Nations languages you speak; Describe how well you understand and speak the language; Explain how important it is to speak that language; Describe how important traditional cultural events are; and, Do you take part in your local community's cultural events?

Cross-tabulations were performed initially between depressed mood and: demographics, socio-economic status, reasons for depression, relationship with parents, self-esteem, social support, bullying and cultural participation. After these initial cross-tabulations, binary logistic regression was used to determine the independent association between the outcome variable of having depressed mood (in comparison to not) and the potential explanatory variables. Due to the smaller sample size of the study, the unadjusted effect of each covariate was determined and then entered one step at a time based on changes in the -2 log likelihood and the Wald test.²⁰ The final results are presented as adjusted odds ratios with 95% confidence intervals.

Only statistically significant associations appear in the tables due to space limitations.

RESULTS

Of 271 students eligible to participate in grades 5 through 8, 204 youth completed the eight-stage consent protocol and the pen and pencil survey for a response rate of 75.3%.

Of those 204 youth participants, 33.3% were in grade 5, 26.5% were in grade 6, 21.6% were in grade 7, and 17.6% were in grade 8. In regard to demographics, 10.3% were 10 years old, 48% were between 11 and 12 years old, and 40.2% were between 13 and 16 years old; 44.1% were male (55.9% female). In regard to socio-economic status, 36.3% had an unemployed father and 92.6% of the employed fathers worked in a non-professional occupation (non-management or occupation not requiring a degree); 44.6% had an unemployed mother and 73.6% of the employed mothers worked in a non-professional occupation. Of the youth, only 43.6% lived with both their mother and father; living with a guardian (21.6%) and living with the mother alone (20.1%) were the next most common answers. During the previous 30 days, 27% of youth were hungry at least some of the time because there was not enough food to eat.

Table 5. Independent Risk Indicators Associated With Depressed Mood in STC Youth

Independent Variables	Odds Ratio	95% Confidence Interval	P-value
I have not worked through things that happened to me, Definitely a reason or probably a reason	3.260	1.43-7.46	0.005
I have someone who shows me love and affection, Almost none of the time or some of the time	4.823	2.04-11.39	0.000
I have a lot of arguments with my parents, Strongly agree or agree	1.754	1.45-1.89	0.001
Physically bullied, Many times a week or once a week	1.688	1.09-2.61	0.004
Reference categories			
I have not worked through things that happened to me – probably not a reason or definitely not a reason;			
I have someone who shows me love and affection – most of the time or all of the time;			
I have a lot of arguments with my parents – neither agree nor disagree or disagree or strongly disagree;			
Physically bullied – once or twice in four weeks or never in four weeks			
R ² = .331			
Hosmer Lemeshow Test = .694			

Comparing response rates to Canadian Census information, 44.1% of all STC youth in grades 5 through 8 were male versus 50.7% in the Census.

Using a summary score of 16 or higher from the CES-D 12, 25% of the youth had moderate depressive symptoms. Using a summary score of 23 or higher from the CES-D 12, 7.8% of the youth had severe depressive symptoms.

Reviewing cross-tabulations with demographics and socioeconomic status, only one survey variable (being hungry in the past 30 days some of the time or more often) was associated with depressed mood (Table 1).

After cross-tabulation, 10 variables from the Reasons for Depression Questionnaire (Table 2), 3 social support variables (Table 3), 1 self-esteem variable (Table 3), 5 parental relationship variables (Table 3) and 3 bullying variables (Table 4) had statistically significant associations with depressed mood.

None of the questions on cultural participation from the First Nations Regional Longitudinal Health Survey were associated with depressed mood.

After initial cross-tabulations, binary logistic regression was used to determine four independent risk indicators associated with having depressed mood in First Nations youth. The covariates included: 1) not having worked through things that happened during childhood, 2) not having someone who shows love and affection, 3) having a lot of arguments with parents, and 4) being physically bullied at least once per week (Table 5).

There was no confounding or effect modification in the final regression model. The R² for the final model was .331 suggesting reasonable explanation of the proportion of variance in the outcome variable explained by the knowledge of the explanatory variables. The goodness of fit test result ($p=0.694$) suggests that the final model is appropriate and that the predicted values are accurate representations of the observed values in an absolute sense.

DISCUSSION

Depression has been linked to multiple negative outcomes in youth. One study found that having depression in adolescence significantly increased the risk for major depression later in life as well as for anxiety disorders, suicide attempts, nicotine dependence, alcohol dependence, educational under-achievement, unemployment and early parenthood.²¹

According to data from the CCHS 1.1, the 12-month prevalence of depression among Canadian adolescents aged 12-19 years old was 6.5% for males and 9.8% for females in 2001.²² Despite a

younger age group, our study found higher rates of depressed mood, as 25% of on-reserve Saskatoon Tribal Council (STC) First Nations youth in grades 5 through 8 (10-16 years old) had moderate depressive symptoms. Part of the difference might be explained by the use of different survey tools.

In a study from the city of Saskatoon using the same measure of depressed mood (CES-D) in the same school grades of 5 through 8 (9-15 years old), 8.9% of Caucasian youth and 21.6% of off-reserve Aboriginal youth (First Nations and Métis) had depressed mood.⁷ The slightly higher rates of depressed mood within First Nations youth who live on-reserve, in comparison to First Nations and Métis youth who live up to 250 kilometres away in a city, appears to be a new finding worthy of additional study.

A review of three large American population-based studies suggests that depressive symptoms start at approximately 12 years of age and peak between 15 and 17 years of age.²³ In our study, the prevalence of depressive symptoms was already quite common at age 10 (26.3%) and continued to increase as age increased (32.1% within age group 13-16). The suggestion that on-reserve First Nations youth may have earlier onset of depressive symptoms has important implications on the implementation of effective prevention strategies.

Although First Nations girls had slightly more depressed mood than First Nations boys, the results were not statistically significant. This is inconsistent with the common finding of differences in the prevalence of depressed mood by gender, even among adolescents.²⁴⁻²⁷

The association between SES and the prevalence of depressed mood has been well described in previous literature.²⁸⁻³³ A surprising finding in our study is the lack of association between socioeconomic status (SES) and the prevalence of depressed mood, although the presence of hunger was found to be important in this study as well as the urban study from Saskatoon.⁷ A possible explanation might be that low SES is the norm on reserves, and as the latter are fairly isolated, there are no relative differences in SES to create the perceptions of social inequality that lead to poor health.³⁴

After regression analysis, one childhood trauma variable, one social support variable, one parental relationship variable and one bullying variable were independently associated with depressed mood in First Nations youth. The association between childhood trauma and depression has been documented previously.³⁵ A prospective study found that a lack of social support from family members and family conflict contributed to adolescent depression.³⁶ The association between bullying and depression has been well documented.^{37,38}

The lack of association between self-esteem and depressed mood in our study is inconsistent with the literature.²⁴

In our study, we found that questions on cultural participation, such as taking part in local Aboriginal community cultural events, were not associated with depressed mood. Although there are no studies that review depressed mood and culture, the findings from other studies reviewing suicidal ideation and cultural participation are inconsistent.^{39,40}

With regard to prevention, one literature review found beneficial long-term effects of up to two years for comprehensive depression prevention programs that included: a) cognitive skills, b) social problem-solving skills and c) training in assertiveness, negotiation and coping skills.^{41,42}

A large meta-analysis of 30 studies addressing the prevention of childhood depression found these programs to have greater efficacy when applied selectively to at-risk youth rather than universally.³³

There are three study limitations to discuss. First, the study was cross-sectional and cannot determine causation. Second, although a valid dimensional survey was used to measure depressed mood, a diagnostic interview was not conducted. Third, our sample has the potential to have a small selection bias by gender.

Our study found high rates of depressed mood within on-reserve First Nations youth living in Saskatchewan. These youth may be at increased risk for problems later in life. Our study provides knowledge of specific risk factors in order to contribute to developing successful prevention programs.

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Received: October 27, 2010

Accepted: February 3, 2011

RÉSUMÉ

Objectifs : Notre premier objectif était de calculer la prévalence de l'humeur dépressive chez les jeunes des Premières nations fréquentant l'école (5^e à 8^e année) dans sept communautés de réserves. Notre second objectif était de déterminer les indicateurs de risque ajustés et non ajustés associés à l'humeur dépressive chez ces jeunes.

Méthode : En mai 2010, nous avons demandé aux élèves de la 5^e à la 8^e année des sept communautés de réserves du conseil tribal de Saskatoon de remplir sur papier un questionnaire exhaustif sur la santé des jeunes. Un protocole de consentement en huit étapes a été suivi avant de les laisser participer.

Résultats : Sur les 271 élèves admissibles, 204 ont rempli le questionnaire, soit un taux de réponse de 75,3 %.

Selon l'échelle de dépression du Center for Epidemiological Studies, 25 % des jeunes éprouvaient des symptômes dépressifs modérés. Après tabulation en croix, 1 variable socioéconomique, 10 variables sociales, 3 variables du soutien social, 1 variable de l'estime de soi, 5 variables des relations parentales et 3 variables de l'intimidation étaient associées à l'humeur dépressive.

Par régression logistique, nous avons repéré quatre indicateurs de risque indépendamment associés à l'humeur dépressive chez les jeunes des Premières nations : 1) ne pas avoir résolu des traumatismes survenus durant l'enfance, 2) n'avoir personne qui leur montre de l'amour et de l'affection, 3) avoir beaucoup de disputes avec les parents et 4) subir de l'intimidation physique au moins une fois par semaine.

Conclusion : Nous avons observé des taux élevés d'humeur dépressive chez les jeunes des Premières nations dans les réserves. Ces jeunes courent maintenant un risque accru d'avoir des problèmes plus tard dans leur vie si l'on ne met pas en œuvre des interventions efficaces pour les aider.

Mots clés : facteurs de risque; dépression; minorités

IN MEMORIAM

William Harding le Riche, BSc, MB.ChB., MD, MPH, FRCPC, FACP

It is with sadness that we inform the public health community of the death on December 31st, 2010 in Toronto of Dr. Harding le Riche. Dr. le Riche was Professor Emeritus in the University of Toronto, where he had been a pioneering public health researcher and a provocative, stimulating and supportive teacher of public health students for more than 25 years, until his retirement in 1984.

Born in South Africa, Professor le Riche earned his undergraduate and medical degrees at the University of Witwatersrand, Johannesburg. His MD thesis dealt with human growth and nutrition. He held public health positions in South Africa and in 1945 established the first non-segregated Health Centre at Knysna, South Africa. In 1950, while on a Rockefeller fellowship, he completed a Master of Public Health (cum laude) at Harvard University. When the South African government abolished his position and refused to recognize his MPH from Harvard, he decided to move to Canada.

In 1952, Dr. le Riche joined the Department of National Health and Welfare in Ottawa, where he was involved in the first Canadian sickness survey. In 1954, he relocated to Physicians Services Incorporated in Toronto. He was appointed to the University of Toronto in 1957 and in 1962 became Professor and Head of the Department of Epidemiology and Biometrics in the School of Hygiene. Under his astute leadership, MSc and PhD programs in epidemiology and biostatistics were developed and expanded. Professor le Riche was renowned for his challenging teaching style, and colleagues and students alike appreciated his keen insight and forward thinking with respect to a wide array of public health issues.

His early research in nutrition and maternal and child health, as well as the development of local public health and primary care services in South Africa, marked areas of interest that continued throughout his career. In Canada, his epidemiologic research in a wide range of topics – including the control of hospital infections, manpower studies, and his pioneering work in analyzing the Physicians Services Incorporated medical insurance records – are landmarks in health and health care research. His research also included work on infectious diseases, tropical diseases, international health and environmental degradation.

In 1981, Professor le Riche received the R.D. Defries Award, the highest award of the Canadian Public Health Association, for outstanding contributions to the broad field of public health. This award carried with it Honorary Life Membership in the Association.

Harding le Riche was a leader in public health in Canada. He is remembered with deep respect and gratitude by many colleagues and former students.