# Correlates of Suicidality: Investigation of a Representative Sample of Manitoba First Nations Adolescents

| Natalie Mota, MA, Brenda Elias, PhD, Bruce Tefft, PhD, Maria Medved, PhD, Garry Munro, and Jitender Sareen, MD

Indigenous adolescents worldwide engage in more suicidal behavior and suicide completion than do other adolescent groups.[1–4] Examining the correlates of suicidality in these youths, which includes suicidal ideation and attempts but excludes completion, could help target interventions to improve the well-being of indigenous communities. Many risk and resiliency factors in indigenous youths are similar to those in other adolescents; however, several unique factors may apply.[5] Furthermore, factors from several levels (e.g., community, family, individual) likely influence suicidality in this population.[6–9]

With regard to individual-level correlates, males in indigenous samples of varied age ranges show higher rates of suicide completion than females,[10,11] but a higher frequency of suicidality is typically reported in females (although sex is rarely significant in multivariate models).[7,12–15] Meanwhile, mixed results have been found for the association between age and suicidality in indigenous youths.[6,8,13,16–19] Other variables found to be associated with increased suicidality in indigenous youths include depressive symptoms, substance use (including smoking), abuse, and traumatic or stressful life events.[6,7,13–15,19–22] Finally, cultural variables have been investigated in relation to suicidality. In studies from British Columbia, adolescent suicide was low in those First Nations communities with higher levels of cultural continuity[23–25] and where 50% or more of individuals knew a First Nations language.[26] However, studies examining relationships between suicidality and cultural variables have reported mixed findings,[12,13,15,20,27] which are likely attributable to the use of different measures, samples, and constructs across studies.

An association between less suicidality and aspects of family or friend unity and support has been found in studies of indigenous adolescents in bivariate and multivariate models.[6,7,17,28] Conversely, several studies have examined different forms of family or friend

*Objectives.* We examined individual, friend or family, and community or tribe correlates of suicidality in a representative on-reserve sample of First Nations adolescents.

*Methods.* Data came from the 2002–2003 Manitoba First Nations Regional Longitudinal Health Survey of Youth. Interviews were conducted with adolescents aged 12 to 17 years (n=1125) from 23 First Nations communities in Manitoba. We used bivariate logistic regression analyses to examine the relationships between a range of factors and lifetime suicidality. We conducted sex-by-correlate interactions for each significant correlate at the bivariate level. A multivariate logistic regression analysis identified those correlates most strongly related to suicidality.

*Results.* We found several variables to be associated with an increased likelihood of suicidality in the multivariate model, including being female, depressed mood, abuse or fear of abuse, a hospital stay, and substance use (adjusted odds ratio range=2.43–11.73). Perceived community caring was protective against suicidality (adjusted odds ratio=0.93; 95% confidence interval= 0.88, 0.97) in the same model.

*Conclusions.* Results of this study may be important in informing First Nations and government policy related to the implementation of suicide prevention strategies in First Nations communities. (*Am J Public Health.* 2012;102:1353–1361. doi:10.2105/AJPH.2011.300385)

dysfunction in relation to increased suicidality. Potential correlates include family conflict, little family care, parental absenteeism, deviant friends, familial substance use, suicidality or completion by family or friends, and interpersonal difficulties.[6,7,12,14,16,18–20,29–31] Economic disparity may also be associated with suicidality[32–34]; however, not all research has shown this association in samples of youths.[13,18,22] Finally, from the late 1800s until 1973, many aboriginal children in Canada were taken from their communities and housed in residential schools managed by the government and churches, with the intent of assimilating these children into mainstream Canadian society.[1,35,36] Indigenous cultural practices and the use of traditional languages were prohibited, and abuse was prevalent.[1,35–37] Although several researchers have discussed the intergenerational impact of the residential school experience,[35,37] no study to date has examined the relationship between having had a parent or grandparent in residential schools and suicidality in youths.

Aspects of perceived community caring and suicidality in indigenous youths have been examined, with mixed findings. Less community safety and isolation from one's community and family have been found to be associated with suicide attempts in American Indian/Alaska Native youths,[6,14] whereas perceived care from community members has been protective for attempts in bivariate models.[6,7] Other studies have found no association between suicide attempts in American Indian youths and related factors such as gang involvement[11] or perceived connection to others.[38] Geographical location may also be related to suicidality and suicide,[20,23,30] but more research is needed.

Most previous studies examining correlates of suicidal behavior in indigenous youths have been conducted on American Indians/Alaska Natives and native Hawaiians. None of these studies have used representative samples, and most have been limited by small samples or convenience samples. Furthermore, several

**TABLE 1—Frequency of Individual-Level Factors, and Their Bivariate Associations With Suicidality: Manitoba First Nations Regional Longitudinal Health Survey of Youth, 2002–2003**

| Individual-Level Factors | No. (%) | Suicidality (n = 198), No. (%) | OR (95% CI) |
|---|---|---|---|
| **Sex** | | | |
| Male (Ref) | 520 (50.7) | 53 (11.1) | 1.00 |
| Female | 605 (49.3) | 145 (27.3) | 3.01*** (2.03, 4.47) |
| Missing cases | 0 (0.0) | . . . | . . . |
| **Age, y** | | | |
| 12–14 (Ref) | 478 (34.0) | 51 (10.5) | 1.00 |
| 15–17 | 647 (66.0) | 147 (23.5) | 2.62*** (1.62, 4.23) |
| Missing cases | 0 (0.0) | . . . | . . . |
| **Stay in hospital** | | | |
| No (Ref) | 786 (67.7) | 138 (18.8) | 1.00 |
| Yes | 67 (5.0) | 24 (50.8) | 4.47*** (2.12, 9.41) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.65* (0.43, 0.98) |
| **Personal injury or illness** | | | |
| No (Ref) | 737 (61.3) | 118 (16.9) | 1.00 |
| Yes | 116 (11.4) | 44 (43.2) | 3.75*** (1.83, 7.70) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.74 (0.47, 1.17) |
| **Moving to another community or home** | | | |
| No (Ref) | 703 (57.9) | 113 (19.2) | 1.00 |
| Yes | 150 (14.8) | 49 (28.2) | 1.66 (0.97, 2.82) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.63 (0.39, 1.02) |
| **Abuse or fear of abuse** | | | |
| No (Ref) | 762 (64.9) | 113 (15.9) | 1.00 |
| Yes | 91 (7.8) | 49 (63.1) | 9.07*** (4.34, 18.97) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.79 (0.52, 1.20) |
| **Past y depressed mood for ≥2 wk** | | | |
| No (Ref) | 685 (63.3) | 58 (9.6) | 1.00 |
| Yes | 293 (25.1) | 119 (42.0) | 6.83*** (4.11, 11.36) |
| Missing cases | 147 (11.7) | 21 (23.9) | 2.97** (1.37, 6.45) |
| **Lifetime drug use** | | | |
| No (Ref) | 714 (54.6) | 73 (9.0) | 1.00 |
| Yes | 306 (31.8) | 107 (34.4) | 5.31*** (2.76, 10.23) |
| Missing cases | 105 (13.7) | 18 (24.2) | 3.24 (0.65, 16.03) |
| **Past year binge drinking (≥5 drinks on 1 occasion)** | | | |
| No (Ref) | 748 (59.4) | 78 (10.0) | 1.00 |
| Yes | 284 (32.2) | 101 (32.8) | 4.41*** (2.98, 6.52) |
| Missing cases | 93 (8.5) | 19 (34.5) | 4.75** (1.85, 12.25) |
| **Smoking behaviors** | | | |
| Not at all (Ref) | 628 (49.8) | 59 (8.9) | 1.00 |
| Occasionally | 146 (11.6) | 43 (37.0) | 6.03*** (2.55, 14.27) |
| Daily | 290 (33.9) | 96 (29.9) | 4.38*** (2.51, 7.64) |
| Missing cases | 61 (4.7) | 0 (0.0) | . . . |

*Continued*

potential correlates of suicidality have been underinvestigated.

We aimed to examine associations of individual, friend or family, and community or tribe factors with suicidality in a representative on-reserve sample of more than 1100 First Nations adolescents.

## METHODS

The current study received institutional ethical approval. We obtained data from the Manitoba First Nations Regional Longitudinal Health Survey of Youth (RHS), a part of a survey of First Nations individuals living on-reserve in Canada that was conducted in 2002 to 2003.[27] The provincial territorial survey,[39] led by the Assembly of Manitoba Chiefs and the Manitoba First Nations Centre for Aboriginal Health Research, included 1125 adolescents aged 12 through 17 years who were randomly selected from 23 First Nations communities from the 7 tribal areas in Manitoba. A multistage stratified random sampling design was employed to ensure representation of all First Nations communities (overall response rate = 70.1%). Several variables examined in the current study also came from the Manitoba Regional Supplement, another RHS survey component (in addition to the core survey) that respondents completed and that included questions exclusively for the Manitoba sample.

Written informed consent was obtained from adolescents aged 14 years and older; for younger participants, written informed consent was obtained from a parent or guardian. Adolescents completed the RHS survey via household interviews by community interviewers. When inquiries were more delicate in nature or when conditions rendered a private one-on-one interview unfeasible, participants read queries and chose desired responses themselves.

### Individual Measures

Participants were asked 2 questions regarding suicidality: "Have you ever thought about committing suicide?" and "Have you ever attempted suicide?" Responses were used to create a suicidality versus no suicidality variable.

We dichotomized sex into male and female, and we dichotomized age into 12 to 14 years

**TABLE 1—Continued**

| | | | |
|---|---|---|---|
| Importance of spirituality or faith | | | |
| Not very important or don't know (Ref) | 321 (29.9) | 60 (18.1) | 1.00 |
| Very or somewhat important | 654 (54.4) | 114 (20.4) | 1.16 (0.74, 1.83) |
| Missing cases | 150 (15.8) | 24 (15.0) | 0.80 (0.36, 1.76) |
| First Nations language knowledge | | | |
| Few words or don't understand (Ref) | 894 (82.1) | 157 (19.0) | 1.00 |
| Fluently or relatively well | 225 (17.6) | 41 (19.7) | 1.05 (0.51, 2.17) |
| Missing cases | 6 (0.3) | 0 (0.0) | . . . |
| Religion | | | |
| None or don't know (Ref) | 306 (26.4) | 54 (19.3) | 1.00 |
| Traditional Native | 235 (17.9) | 52 (26.4) | 1.50 (0.93, 2.41) |
| Nonindigenous | 359 (33.7) | 59 (14.6) | 0.72 (0.27, 1.93) |
| Both | 76 (5.0) | 12 (38.8) | 2.65 (0.83, 8.48) |
| Missing cases | 149 (17.1) | 21 (11.8) | 0.56 (0.15, 2.12) |
| Traditional medicine and spirituality | | | |
| Low activity level (Ref) | 565 (49.4) | 88 (17.2) | 1.00 |
| High activity level | 382 (32.6) | 81 (24.3) | 1.54 (0.89, 2.67) |
| Missing cases | 178 (18.0) | 29 (13.3) | 0.74 (0.32, 1.72) |
| Hunting activities | | | |
| Low activity level (Ref) | 508 (40.4) | 96 (22.4) | 1.00 |
| High activity level | 463 (44.0) | 76 (16.2) | 0.67 (0.39, 1.17) |
| Missing cases | 154 (15.7) | 26 (18.1) | 0.77 (0.34, 1.75) |
| Community festivities | | | |
| Low activity level (Ref) | 372 (32.3) | 75 (20.0) | 1.00 |
| High activity level | 580 (50.9) | 95 (18.8) | 0.92 (0.58, 1.48) |
| Missing cases | 173 (16.8) | 28 (17.8) | 0.86 (0.40, 1.86) |
| Active community participation | | | |
| Low activity level (Ref) | 354 (31.6) | 52 (17.4) | 1.00 |
| High activity level | 618 (53.1) | 123 (20.3) | 1.21 (0.76, 1.92) |
| Missing cases | 153 (15.3) | 23 (17.8) | 1.03 (0.44, 2.40) |

*Note.* CI = confidence interval; OR = unadjusted odds ratio. All numbers are unweighted. All percentages are weighted (calculated estimates that take the survey's sampling frame into consideration). Percentages may not sum to 100% as a result of rounding.
*$P \leq .05$; **$P \leq .01$; ***$P \leq .001$.

language fluency (fluently or relatively well vs few words or do not understand).

Participants were asked whether they engaged in any of 16 cultural activities (e.g., cleaning or preparing animal hides, attending pow-wows). The α coefficient for all 16 items was 0.79. We used SPSS version 15.0 (SPSS Inc, Chicago, IL) to conduct an exploratory factor analysis of the items. A principal components analysis using oblique (oblimin) rotation yielded 4 eigenvalues greater than 1 (2.40, 2.50, 2.21, 2.25), accounting for 52.0% of the variance. The item "go camping with family/ friends" did not have any factor loading over 0.40, and we excluded it from further analyses. The other items formed a 4-factor solution, which we named traditional medicine and spirituality, hunting activities, community festivities, and active community participation. They accounted for 22.7%, 12.2%, 10.2%, and 6.9% of the variance, respectively (pattern matrix available upon request). Because all 4 factors showed skewed distributions, we used a median split to dichotomize each variable (low vs high activity level).

Participants were asked, "At this time, what religion or belief do you follow?" and were asked to "mark all that apply" from the following choices: traditional Native, Catholic, Anglican, United, Methodist, Pentecostal, none, and other. We made a 4-level variable—none or don't know, traditional Native, nonindigenous, and both. Participants were also asked "How important is spirituality/faith to you?" which we dichotomized into not very important or don't know versus very or somewhat important.

### Friends and Family Measures

Two questions assessed socioeconomic disparity: "During the past 30 days, did you ever go to bed hungry because there was not enough food to eat?" (never vs all the time or sometimes) and "In this house, who works at a job for money?" (someone vs no one). We created 3 levels for parental cohabitation status: parents living together, parents not living together, and 1 or both parents deceased.

Two questions were included regarding residential schooling: "Was your mother or father ever a student of a residential school?" and "Were any of your grandparents students of a residential school?" We created a 4-level

and 15 to 17 years. A single question assessed depressed mood: "During the past 12 months, was there ever a time when you felt sad, blue, or depressed for 2 weeks or more in a row?" We dichotomized reponses to this question into no versus yes.

Participants were given a list of 9 drug categories and were asked whether they had ever used them without a prescription, and if so, how often. We used the responses to create a dichotomous variable (no vs yes) of ever having used any of these substances. The sample was asked separately about tobacco smoking: "At the present time, do you smoke cigarettes daily, occasionally, or not at all?"

and we created a 3-level variable from the responses. Finally, with regard to alcohol, participants were given several options for how often in the past 12 months they had had 5 or more alcoholic beverages. We used the responses to form a variable for any past-year binge drinking versus no past-year binge drinking.

Participants were asked "What languages do you speak?" For each language selected, they had to select a response from 4 choices: fluently, relatively well, a few words, and do not understand. Among the language choices was a list of 32 First Nations languages. We created a dichotomous variable assessing First Nations

**TABLE 2—Frequency of Friend or Family Factors, and Their Bivariate Associations With Suicidality: Manitoba First Nations Regional Longitudinal Health Survey of Youth, 2002–2003**

| Friend or Family Factors | Prevalence in RHS Sample, No. (%) | Suicidality (n = 198), No. (%) | OR (95% CI) |
|---|---|---|---|
| Went to bed hungry in past 30 d | | | |
| Never (Ref) | 829 (70.8) | 140 (17.5) | 1.00 |
| All the time or sometimes | 138 (12.6) | 35 (33.0) | 2.33 (0.95, 5.71) |
| Missing cases | 158 (16.6) | 23 (14.9) | 0.83 (0.36, 1.92) |
| Who works at a job for money | | | |
| Someone (Ref) | 756 (69.4) | 141 (21.0) | 1.00 |
| No one | 144 (9.9) | 26 (15.6) | 0.70 (0.28, 1.74) |
| Missing cases | 225 (20.7) | 31 (12.8) | 0.58 (0.25, 1.34) |
| Parental cohabitation | | | |
| Parents living together (Ref) | 807 (69.4) | 139 (19.1) | 1.00 |
| Parents not living together | 204 (20.7) | 34 (14.7) | 0.73 (0.47, 1.14) |
| ≥ 1 parent deceased | 56 (5.7) | 17 (31.2) | 1.91 (0.85, 4.30) |
| Missing cases | 58 (4.2) | 8 (23.0) | 1.26 (0.82, 1.96) |
| Family or friend committed suicide past y | | | |
| No (Ref) | 752 (65.5) | 126 (17.9) | 1.00 |
| Yes | 225 (21.1) | 58 (27.4) | 1.73** (1.27, 2.35) |
| Missing cases | 148 (13.4) | 14 (8.0) | 0.40 (0.10, 1.57) |
| Parent or grandparent attended residential school | | | |
| No or don't know (Ref) | 522 (43.8) | 80 (16.5) | 1.00 |
| Parent(s) only | 114 (8.7) | 25 (22.8) | 1.49 (0.67, 3.28) |
| Grandparent(s) only | 318 (26.9) | 58 (21.2) | 1.36 (0.87, 2.14) |
| Both | 111 (13.7) | 29 (21.7) | 1.40 (0.73, 2.67) |
| Missing cases | 60 (6.9) | 6 (13.7) | 0.80 (0.20, 3.14) |
| Death of parents | | | |
| No (Ref) | 767 (65.7) | 134 (19.7) | 1.00 |
| Yes | 86 (7.1) | 28 (33.6) | 2.06 (0.76, 5.59) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.61* (0.40, 0.93) |
| Death in family | | | |
| No (Ref) | 382 (30.4) | 49 (18.1) | 1.00 |
| Yes | 471 (42.4) | 113 (23.1) | 1.36 (0.86, 2.17) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.68 (0.38, 1.23) |
| Divorce or separation of parents | | | |
| No (Ref) | 690 (58.2) | 109 (16.5) | 1.00 |
| Yes | 163 (14.5) | 53 (38.3) | 3.14*** (1.87, 5.28) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.76 (0.48, 1.21) |
| Stay in foster home | | | |
| No | 772 (64.9) | 130 (19.6) | 1.00 |
| Yes | 81 (7.8) | 32 (32.3) | 1.95 (0.64, 5.96) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.61 (0.37, 1.01) |
| Other separation from parents | | | |
| No (Ref) | 787 (65.0) | 139 (20.1) | 1.00 |
| Yes | 66 (7.8) | 23 (28.0) | 1.55 (0.63, 3.81) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.60* (0.37, 0.97) |

*Continued*

variable: no or don't know, parent(s) only, grandparent(s) only, both.

With regard to previous suicide by friend or family member, we dichotomized the question "In the past 12 months, has a close friend or family member committed suicide?" into a no versus yes variable.

With regard to traumatic and stressful life events, participants were asked "Have you ever experienced any of the following events or situations that caused you a great amount of worry or unhappiness?" They were given a series of stressors and had to mark all that apply. We examined 17 of these events in the present study, representing both friend or family and individual factors. We grouped items that were conceptually similar into single variables. We collapsed "illness/injury of friend" and "illness/injury of a family member" into "illness/injury of a friend or family member." We grouped the items "conflict between parents," "conflict between family members," "conflict between friends," and "a fight with a friend" into "family/friendship related conflict."

## Community and Tribe Measures

Community of residence was grouped on the basis of the remoteness index developed and used by Indian and Northern Affairs Canada.[40] The remoteness index indicates the proximity of a community to service centers (towns or cities that provide retail services, health care services, etc.). Communities were placed into 1 of 3 categories: within 50 kilometers, between 50 and 350 kilometers, and air, rail, or boat access only.

Each participant was given 27 statements regarding whether certain facts were true about community life (e.g., connectedness, violent and illegal activity) and was asked to respond not at all, a little, pretty much, or very much true. Examples of items included, "All the different families in this community get along," "Some people in my community use illegal drugs," and "Overall, I like living in this community." Nine items were reverse-coded so that for all items, the more the participant perceived the statement to be true, the more perceived caring was endorsed. We used SPSS version 15.0 to conduct an exploratory factor analysis of the 27 items to determine how to examine them as correlates. Two eigenvalues greater than 1 (22.42, 1.05) were produced from the

**TABLE 2—Continued**

| | | | |
|---|---|---|---|
| Illness or injury of a friend or family member | | | |
| No (Ref) | 643 (54.8) | 83 (14.3) | 1.00 |
| Yes | 210 (17.9) | 79 (41.8) | 4.30*** (2.34, 7.91) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.90 (0.59, 1.37) |
| Alcoholism or mental disorder in family | | | |
| No (Ref) | 756 (62.7) | 126 (17.9) | 1.00 |
| Yes | 97 (10.0) | 36 (40.8) | 3.17* (1.29, 7.80) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.69 (0.44, 1.07) |
| Family- or friendship-related conflict | | | |
| No (Ref) | 469 (40.3) | 53 (9.6) | 1.00 |
| Yes | 384 (32.4) | 109 (35.3) | 5.11*** (2.58, 10.11) |
| Missing cases | 272 (27.3) | 36 (13.0) | 1.41 (0.78, 2.52) |
| Breakup with a girlfriend or boyfriend | | | |
| No (Ref) | 660 (55.7) | 95 (17.9) | 1.00 |
| Yes | 193 (17.0) | 67 (31.3) | 2.10** (1.24, 3.55) |
| Missing cases | 272 (27.3) | 36 (13.0) | 0.69 (0.42, 1.13) |

*Note.* CI = confidence interval; OR = unadjusted odds ratio. All numbers are unweighted. All percentages are weighted (calculated estimates that take the survey's sampling frame into consideration). Percentages may not sum to 100% as a result of rounding.
*P ≤ .05; **P ≤ .01; ***P ≤ .001.

items by employing a principal components analysis using oblique (oblimin) rotation. These 2 factors accounted for 86.9% of the variance. We interpreted items with loadings greater than 0.40 as salient. All items had a loading of well over 0.40 on factor 1, and no item had a loading of 0.40 or higher on factor 2. In addition, factor 2 accounted for only 3.9% of the variance. We formed a single-factor solution into a continuous variable called "perceived community caring" (all items and pattern matrix available upon request). Values ranged from 28 to 108, and all items had a coefficient α of 0.83.

## Statistical Analysis

We applied correct weights to all analyses to ensure representation of all on-reserve First Nations youths in Manitoba. We also employed Taylor Series Linearization, a variance estimation technique, using SUDAAN version 9.01 (RTI International, Research Triangle Park, NC) to correct for the complex sampling design of the RHS.

We calculated unweighted frequencies and weighted prevalence estimates for categorical variables, and we calculated the mean and standard error for the continuous variable for all independent variables. We also calculated the unweighted frequencies and weighted percentages of missing data for each variable. We employed bivariate logistic regression analyses to investigate the relationships between each correlate and lifetime suicidality. We conducted sex-by-correlate interactions for each significant correlate at the bivariate level. To gain an indication of the strongest correlates of suicidality in First Nations youths, we conducted a multivariate logistic regression analysis by entering significant bivariate correlates in the model.

## RESULTS

A total of 19.0% (n = 198) of the sample reported experiencing any suicidality (missing: 9.7%; n = 114). Although the numbers and percentages reported in the tables reflect the entire sample (including missing values), in the text we have chosen to report prevalence rates based only on valid responses (i.e., excluding missing values). Thus, the prevalence rates described here may differ from those reported in the tables. Table 1 shows the prevalence of individual-level factors and their bivariate relationships with suicidality. Proportions of male and female adolescents were similar, and most participants were aged between 15 and 17 years. Substance use, daily smoking, and

**TABLE 3—Frequency of Community or Tribe Factors, and Their Bivariate Associations With Suicidality: Manitoba First Nations Regional Longitudinal Health Survey of Youth, 2002–2003**

| Community or Tribe Factors | Prevalence in RHS Sample, No. (%) or Mean ±SE | Suicidality (n = 198), No. (%) or Mean ±SE | OR (95% CI) |
|---|---|---|---|
| Geographical location (proximity to service centers) | | | |
| Within 50 km (Ref) | 176 (22.3) | 27 (14.1) | 1.00 |
| Between 50 and 350 km | 683 (65.2) | 129 (20.5) | 1.58 (0.69, 3.62) |
| Air, rail, or boat access | 266 (12.6) | 42 (19.5) | 1.49 (0.55, 4.03) |
| Missing cases | 0 (0.0) | . . . | . . . |
| Perceived community caring | | | |
| Average score[a] | 64.8 ±0.1 | 60.5 ±0.2 | 0.94*** (0.92, 0.97) |
| Missing cases, no. (%) | 484 (47.3) | 78 (16.3) | 0.73 (0.34, 1.53) |

*Note.* CI = confidence interval; OR = unadjusted odds ratio. All numbers are unweighted. Percentages, means, and SEs are weighted (calculated estimates that take the survey's sampling frame into consideration).
[a]The range of possible scores on the perceived community caring variable was between 28 and 108 in the whole sample and between 38 and 81 in those individuals who selected suicidality.
***P ≤ .001.

**TABLE 4—Multivariate Analysis Examining Relationships Between Suicidality and Correlates: Manitoba First Nations Regional Longitudinal Health Survey of Youth, 2002–2003**

| Factors | Suicidality (n = 198),[a] No. (%) or Mean (SE) | AOR (95% CI) |
|---|---|---|
| Sex, no. (%) | | |
| Male (Ref) | 53 (11.1) | 1.00 |
| Female | 145 (27.3) | 2.51* (1.03, 6.12) |
| Age, no. (%) | | |
| 12–14 y (Ref) | 51 (10.5) | 1.00 |
| 15–17 y | 147 (23.5) | 0.84 (0.22, 3.21) |
| Stay in hospital, no. (%) | | |
| No (Ref) | 138 (18.8) | 1.00 |
| Yes | 24 (50.8) | 11.73** (2.13, 64.75) |
| Personal injury or illness, no. (%) | | |
| No (Ref) | 118 (16.9) | 1.00 |
| Yes | 44 (43.2) | 0.49 (0.23, 1.07) |
| Abuse or fear of abuse, no. (%) | | |
| No (Ref) | 113 (15.9) | 1.00 |
| Yes | 49 (63.1) | 2.43* (1.14, 5.19) |
| Past y depressed mood for ≥2 wk, no. (%) | | |
| No (Ref) | 58 (9.6) | 1.00 |
| Yes | 119 (42.0) | 4.72* (1.32, 16.90) |
| Lifetime drug use, no. (%) | | |
| No (Ref) | 73 (9.0) | 1.00 |
| Yes | 107 (34.4) | 6.82* (1.44, 32.24) |
| Past year binge drinking (≥5 drinks on 1 occasion), no. (%) | | |
| No (Ref) | 78 (10.0) | 1.00 |
| Yes | 101 (32.8) | 3.65* (1.00, 13.25) |
| Smoking behaviors, no. (%) | | |
| Not at all (Ref) | 59 (8.9) | 1.00 |
| Occasionally | 43 (37.0) | 0.53 (0.08, 3.35) |
| Daily | 96 (29.9) | 0.65 (0.13, 3.34) |
| Family or friend committed suicide past y, no. (%) | | |
| No (Ref) | 126 (17.9) | 1.00 |
| Yes | 58 (27.4) | 1.37 (0.67, 2.80) |
| Divorce or separation of parents, no. (%) | | |
| No (Ref) | 109 (16.5) | 1.00 |
| Yes | 53 (38.3) | 2.77 (0.91, 8.41) |
| Illness or injury of a friend or family member, no. (%) | | |
| No (Ref) | 83 (14.3) | 1.00 |
| Yes | 79 (41.8) | 1.47 (0.65, 3.29) |
| Alcoholism or mental disorder in family, no. (%) | | |
| No (Ref) | 126 (17.9) | 1.00 |
| Yes | 36 (40.8) | 0.40 (0.09, 1.81) |
| Family- or friendship-related conflict, no. (%) | | |
| No (Ref) | 53 (9.6) | 1.00 |
| Yes | 109 (35.3) | 1.92 (0.92, 4.00) |

*Continued*

past-year depressed mood were each reported by approximately one third of youths. Individual traumatic events were also prevalent. Most youths considered spirituality or faith to be at least somewhat important to them, and the largest proportion of the sample was of non-indigenous faith. In bivariate analyses, sociodemographic variables, several traumatic or stressful life events, substance use, and depressed mood were significantly associated with suicidality (odds ratio [OR] range = 2.62–9.07). We found no significant sex-by-correlate interactions (data not shown in table but available upon request).

Table 2 displays the prevalence of friend or family factors and their bivariate associations with suicidality. Approximately one quarter of the sample had experienced the suicide of a family member or friend in the past year, and more than half disclosed that a parent or grandparent had attended a residential school. The frequency of friend- or family-related stressful life events ranged from approximately 10% to 60%. Several variables were found to be related to suicidality, including a past-year friend or family suicide and several traumatic or stressful life events (OR range = 1.73–5.11). We found no significant sex-by-correlate interactions (data not shown in table but available upon request).

Table 3 displays the prevalence of community or tribe factors and their bivariate associations with suicidality. Almost two thirds of the sample resided in a community 50 to 350 kilometers away from a service center. The mean level of perceived community caring was 64.8 (SE = 0.1). We found no relationship between geographical location and suicidality. However, we found perceived community caring to be protective for suicidality (OR = 0.94; 95% confidence intervals [CI] = 0.92, 0.97), although the sex-by-correlate interaction was not significant (data not shown in table but available upon request).

Table 4 displays the results of the multivariate regression analysis examining the relationship between any suicidality and each community or tribe factor, friend or family factor, and individual factor that was significant in bivariate analyses. In this model, being female, a hospital stay, abuse or fear of abuse, past-year depressed mood, lifetime drug use, and past-year binge drinking emerged as the

**TABLE 4—Continued**

| | | |
|---|---|---|
| Breakup with a girlfriend or boyfriend, no. (%) | | |
| No (Ref) | 95 (17.9) | 1.00 |
| Yes | 67 (31.3) | 0.57 (0.21, 1.60) |
| Perceived community caring, mean (SE) | 64.8 (0.6) | 0.93** (0.88, 0.97) |

*Note.* AOR = adjusted odds ratio (adjusted for significant correlates in bivariate analyses); CI = confidence interval. All numbers are unweighted. All percentages are weighted (calculated estimates that take the survey's sampling frame into consideration).
[a]Totals for each correlate may not add up to n = 198 (total suicidality cases) because of some variables for which the individual endorsed suicidality but was missing, "don't know," or "refuse" on the other variable.
*$P \leq .05$; **$P \leq .01$.

strongest correlates of suicidality (adjusted odds ratio [AOR] range = 2.43–11.73). Perceived community caring remained significant in this model as protective of suicidality (AOR = 0.93; 95% CI = 0.88, 0.97).

We also conducted bivariate analyses for each correlate with suicidal ideation and with suicide attempts, separately. We calculated sex-by-correlate interactions for each significant variable. The pattern of results was similar overall to that of the combined suicidality variable. We did not conduct multivariate analyses because of low statistical power for attempts (results available upon request).

## DISCUSSION

This study is unique in Canada because it used a representative sample of on-reserve First Nations youths to explore correlates of suicidality. Several important findings emerged. First, the lifetime prevalence of suicidality in First Nations adolescents aged 12 to 17 years was found to be 19%. This is higher than the prevalence of 13.5% found in a representative sample of Canadian adolescents aged 15 to 18 years.[41] The disparity is more pronounced when only youths aged 15 to 17 years from the RHS survey are considered to make the age ranges more comparable between studies (23.5% in the RHS vs 13.5%). Overall, the factors associated with suicidality identified in the First Nations sample (e.g., substance use, abuse, depressive symptoms, constructs comparable to community caring) were similar to those found in other samples of youths.[42-45] Furthermore, First Nations girls were found to be more likely than were boys to experience suicidality in the multivariate model. Previous research has shown that this relationship likely occurs because of the

increased lethality of attempts by men, leading to higher rates of completion.[46,47] Women, however, are more likely to survive an attempt, possibly placing them at risk for multiple attempts.[46,47]

We also found most individual stressful or traumatic life events to be significantly associated with suicidality in unadjusted models. Furthermore, abuse or fear of abuse remained a significant correlate in the multivariate model. Victims of abuse have been shown in indigenous samples to be at risk for outcomes such as psychopathology and problem behavior.[48-50] It is possible that, in small communities, youths who are abused may not have anyone in whom to confide. Instead, they may express their pain in detrimental ways, including suicidality.

A hospital stay also emerged as a correlate in the multivariate analysis. It can be speculated that a large proportion of hospital stays in this sample was attributable to suicidal behavior, thus accounting for much of the relationship. However, strong relationships between suicidality and self-reported health status or concerns and mental conditions have also been identified in indigenous samples,[6,14,51] and it is likely that hospital stays represent the more severe illness cases.

Depressed mood and substance use were significantly associated with an increased likelihood of suicidality in the multivariate model. Relationships between these factors and suicidality have been shown in indigenous and other adolescent samples.[6,7,15,20,52-54] Mood and substance use disorders are also prevalent in samples of youths who have completed suicide.[46,55,56] Alcohol and drugs may be forms of self-medication for emotional pain.[54,57]

None of the cultural variables we examined emerged as significant correlates of suicidality.

These results are consistent with some previous findings,[15,20,27] possibly reflecting the crudeness of the measure used for cultural practice, as it did not inquire about the frequency of activity exposure.

Several friend or family variables were strongly related to suicidality in unadjusted models, although they did not emerge as significant correlates in the multivariate analysis. These findings are generally consistent with previous studies of indigenous youths and other adolescent samples examining correlates of suicidality.[6,7,14,16,20,30,31] Throughout adolescence, friends and parents act as important attachment figures for youths,[58,59] and the results of this study support the importance of these relationships. Although the indirect influence of friend or family factors on suicidality was outside the scope of this study, different risk and protective friend or family factors have been found in relation to variables that were significant in our multivariate analysis, such as substance use and depressive symptoms.[60-63]

There were also several nonsignificant findings with regard to family factors and their relationships to suicidality, including parental cohabitation status, death of parents, a stay in a foster home, and having had a parent or grandparent who attended a residential school. Although these findings are surprising, these variables do not directly assess the strength of the youths' relationships with their guardians or the stability of their home environment. Factors such as family conflict, quality of foster care, and parenting style may be more important in influencing several undesirable outcomes.[64-66]

With regard to community or tribe factors, perceived community caring emerged as a significant protective factor for suicidality in the multivariate model. Previous research has found mixed results in the relationship between suicidality and facets of what we have termed perceived community caring.[6,7,11,38] However, the present study incorporated a number of these facets into a single measure as opposed to examining them individually. The use of a measure that has captured perceived level of community caring may account for the current finding. Alternatively, true differences could exist between samples, in that community caring may be protective for suicidality in some communities but not in others.

It should be noted that we found significant associations between suicidality and respondents with missing values for a few of the correlates examined (e.g., binge drinking, past-year depressed mood). Although this was unexpected, we speculate that those participants in the missing category who responded "don't know" or "refuse" to questions assessing the presence of these correlates may be influencing the associations found. For example, if a participant refused to answer questions about alcohol use, it may be that he or she is not disclosing some drinking behavior.

The current study has some limitations. First, the RHS was cross-sectional, which prevented us from investigating causal relationships. Recall bias in responses may have also affected findings. Second, the psychometric properties of the perceived community caring and cultural practice measures have yet to be evaluated. Third, the RHS survey did not assess mental disorders, which have been identified as correlates of suicidality in First Nations populations.[51] Fourth, we used logistic regression analyses rather than multilevel analyses to examine associations between community or tribe correlates and suicidality. Perhaps future studies should take a multilevel approach. Finally, the findings of the current study may not be generalizable to completed suicides.

Nonetheless, this research has several implications. First, the study findings suggest that clinicians and frontline workers in First Nations communities should be screening for factors such as depressive symptomatology, substance use, and abuse when assessing suicidality in First Nations youths. Second, the implementation of substance use prevention or intervention programs for First Nations adolescents could be a critical step in reducing suicidality.[67] For reducing childhood maltreatment, culturally sensitive and integrative prevention or intervention efforts emphasizing violence awareness and parenting skills have been proposed.[68] Finally, we identified perceived community caring as a protective factor for suicidality. Aspects of connectedness, such as adults talking with and showing care for youths, have been cited as being important to suicide prevention.[69] Furthermore, a suicide prevention strategy that included components such as using neighborhood volunteers as "natural helpers" and involving community members (e.g., elders,

youths) in designing the strategy was found to reduce suicidality in a sample of American Indian youths.[70]

We identified community or tribe, friend or family, and individual correlates of suicidality in a representative sample of First Nations youths. These findings can assist in developing primary, secondary, and tertiary suicide prevention strategies. ■

## About the Authors

*Natalie Mota is with the University of Manitoba, Winnipeg, Manitoba, Canada. Brenda Elias is with the Department of Community Health Sciences, University of Manitoba. Bruce Tefft and Maria Medved are with the Department of Psychology, University of Manitoba. Garry Munro is with the Cree Nation Tribal Health Centre, The Pas, Manitoba. Jitender Sareen is with the Departments of Psychiatry, Psychology, and Community Health Sciences, University of Manitoba.*

*Correspondence should be sent to Jitender Sareen, PZ-430 PsycHealth Centre, 771 Bannatyne Ave, Winnipeg, Manitoba, Canada R3E 3N4 (e-mail: sareen@ cc.umanitoba.ca). Reprints can be ordered at http://www. ajph.org by clicking the "Reprints" link.*

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## Contributors

N. Mota conducted the analyses, contributed to the design and methodology of the study, and wrote the first complete draft of the article. B. Elias, B. Tefft, M. Medved, and G. Munro contributed to the design and methodology of the study and editing of the article for intellectual content. J. Sareen initially conceptualized the study and contributed to study design, study methodology, and the editing of the article.

## Human Participant Protection

Participant data was obtained from a deidentified, previously collected data set. However, institutional ethical approval was received for this specific project, and permission to publish the results of this study was granted by the Assembly of Manitoba Chiefs Health Information Research Governance Committee.

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