Suicide among Manitoba's aboriginal people, 1988 to 1994

Brian Malchy,* MD; Murray W. Enns,* MD; T. Kue Young,† MD, DPhil; Brian J. Cox,*‡ PhD

Abstract

Objective: To compare and contrast the characteristics of suicides among aboriginal and nonaboriginal people in Manitoba.

Design: Retrospective review of all suicides, based on a confidential analysis of records held by the Office of the Chief Medical Examiner.

Setting: Manitoba between 1988 and 1994.

Outcome measures: Standardized suicide rates, age- and sex-specific suicide rates, blood alcohol level at time of death, psychiatric help-seeking behaviour before suicide and residence on a reserve.

Results: Age-standardized suicide rates were 31.8 and 13.6 per 100 000 population per year among aboriginal and nonaboriginal people, respectively. The mean age of aboriginal people who committed suicide was 27.0 (standard deviation [SD] 10.8) years, compared with a mean age of 44.6 (SD 18.8) years for nonaboriginal people who committed suicide ($p < 0.001$). Blood alcohol levels at the time of death were a mean of 28 (SD 23) mmol/L among aboriginal people and 12 (SD 20) mmol/L among nonaboriginal people ($p < 0.0001$). Before their death, 21.9% of nonaboriginal suicide victims had sought psychiatric care whereas among aboriginal suicide victims 6.6% had sought care ($p < 0.0001$). Although the suicide rate was higher among aboriginal people living on reserve than among those living off reserve (52.9 v. 31.3 per 100 000 per year), both of these rates were substantially higher than the overall rates among nonaboriginal people. There were no significant differences in mean age, sex, blood alcohol level and previous psychiatric care among aboriginal people who committed suicide living on and off reserve.

Conclusions: There was a high rate of suicide among Manitoba's aboriginal people between 1988 and 1994; this rate was comparable to earlier estimates of national suicide rates among aboriginal people. The reserve environment does not, by itself, account for the high suicide rate among Manitoba's aboriginal people. Further study of help-seeking behaviour and the association between alcohol abuse and suicide, particularly among aboriginal peoples, is indicated.

Résumé

Objectif : Comparer les caractéristiques des suicides chez les autochtones et les non-autochtones du Manitoba.

Conception : Examen rétrospectif de tous les suicides, fondé sur une analyse confidentielle des dossiers détenus par le Bureau du médecin légiste en chef.

Contexte : Manitoba, entre 1988 et 1994.

Mesures des résultats : Taux de suicide normalisés, taux de suicide selon l'âge et le sexe, alcoolémie au moment du décès, recherche d'aide psychiatrique avant le suicide et résidence dans une réserve.

Résultats : Les taux de suicide normalisés selon l'âge étaient de 31,8 et 13,6 pour 100 000 personnes par année chez les autochtones et les non-autochtones respectivement. Les autochtones se sont suicidés à 27,0 ans en moyenne (écart-type [ET] 10,8) et les non-autochtones, à 44,6 ans en moyenne (ET 18,8) ($p <$ 0,001). L'alcoolémie au moment du décès était en moyenne de 28 (ET 23) mmol/L chez les autochtones et de 12 (ET 20) mmol/L chez les non-autochtones ($p < 0,0001$). Avant leur décès, 21,9 % des non-autochtones qui se sont suicidés

Evidence

Études

From the Departments of *Psychiatry, †Community Health Sciences and ‡Psychology, University of Manitoba, Winnipeg, Man.

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avaient demandé des soins psychiatriques, contre 6,6 % des autochtones qui se sont suicidés ($p < 0,0001$). Même si le taux de suicide était plus élevé chez les autochtones vivant dans des réserves que chez les autres autochtones (52,9 c. 31,3 pour 100 000 personnes par année), ces 2 taux étaient beaucoup plus élevés que les taux généraux chez les non-autochtones. Il n'y avait pas de différences significatives quant à l'âge moyen, au sexe, à l'alcoolémie et aux soins psychiatriques antérieurs chez les autochtones qui se sont suicidés et qui vivaient dans des réserves et chez ceux qui vivaient en dehors de celles-ci.

Conclusions : Le taux de suicide chez les autochtones du Manitoba était élevé entre 1988 et 1994. Le taux était comparable à des estimations antérieures des taux de suicide nationaux chez les autochtones. L'environnement de la réserve n'explique pas en soi le taux de suicide élevé chez les autochtones du Manitoba. Une étude plus poussée du comportement de recherche d'aide et des liens entre l'abus de l'alcool et le suicide, surtout chez les autochtones, s'impose.

In Western industrialized nations, the last 50 years have witnessed a steady increase in youth suicide.[1,2] In clinical practice, assessment of high suicide risk used to involve mainly middle-aged or elderly men who were suffering from depression, but it has been expanded to include young people, whose pattern of suffering is less clearly defined.[1] Among Canadians, suicide now ranks as the sixth greatest cause of potential years of life lost among girls and women and, what is more alarming, as the third greatest cause among boys and men.[3]

Aboriginal people in Canada and the US appear to be particularly vulnerable to suicide, with rates exceeding those in the population at large.[4–8] Risk factors such as social change, poverty, alcohol abuse, family violence and access to firearms have frequently been identified.[8–14] The Royal Commission on Aboriginal Peoples, in a special report on suicide, showed that, nationally, aboriginal people have a threefold to fourfold relative risk of suicide.[15] The Royal Commission report recommended a nation-wide campaign, both on and off reserves, to combat the problem. Given the widespread nature of suicide among aboriginal people, the commissioners cited important historical and political factors as essential causes that require remediation.

The Royal Commission also recognized that prevention efforts need to be coordinated locally and that, therefore, there is a need for up-to-date, comprehensive, local data. In Manitoba, reports on youth suicide have suggested that rates of suicide among aboriginal youths greatly exceeded those in the population at large.[16]

We conducted a study in Manitoba to determine the risk of suicide among aboriginal people, in relation to the risk in the nonaboriginal population. We also investigated the pattern of psychiatric help-seeking behaviour before suicide and, when possible, blood alcohol levels at the time of death. The methods of suicide used by the 2 populations were also explored and compared. Finally, the pattern of aboriginal suicides on and off reserve was compared to assess the influence of the reserve environment on suicide.

Methods

We conducted a retrospective analysis of data compiled by the Office of the Chief Medical Examiner (O-CME) of Manitoba. The O-CME is the government body responsible for keeping records of causes of death in the province. It also conducts investigations into the circumstances of "unnatural" deaths (e.g., suicides, accidents and homicides). For deaths attributed to suicide by the O-CME, the victim's name, age (date of birth), place of residence, marital status, ethnic origin, location and method of suicide are consistently recorded. In most cases, the blood level of alcohol and of other drugs is also recorded.

Our study encompassed the years 1988 through 1994. It was based on data provided by the O-CME on a strictly confidential basis. This study was reviewed and approved by the University of Manitoba Faculty of Medicine Committee on the Use of Human Subjects in Research.

We used data from the 1991 Canadian census, which fell in the middle of our study period, to estimate the aboriginal and nonaboriginal populations in Manitoba. According to the census, 11% of the provincial population reported some aboriginal origin. The O-CME does not have explicit criteria for defining the aboriginal status of a decedent. Therefore, we do not know the true population denominator for the suicide cases among aboriginal people, as classified by the O-CME. We decided to use the broadest aboriginal definition from the census, which included Indians with or without treaty status, Metis people and people with multiple origins that included aboriginal heritage. It should be noted that only 3 reserves in Manitoba, with a total estimated population of 500, refused to be enumerated in the census, whereas in some other provinces much larger reserves refused to participate.

In the analysis, we used the χ^2 test to compare categorical data and the 2-tailed Student's *t*-test to compare means. Multiple logistic regression analyses were performed to evaluate the extent to which aboriginal status predicted

postmortem blood alcohol levels and previous psychiatric care, while controlling for several confounding variables.

Results

There were 1109 suicides in Manitoba during the 7-year study period. In 80 cases the O-CME did not record the person's ethnic background; these cases were excluded from further analyses. Of the remaining 1029 cases, 227 involved aboriginal people and 802 nonaboriginal people. Table 1 provides the age-specific suicide rates among aboriginal people (on and off reserve) and nonaboriginal people. Since the age distributions of the 2 populations were very different, age standardization was performed with the use of the direct method, with the total Manitoba population in 1991 as the standard. This resulted in a rate among aboriginal people that was 2.3 times higher than the rate among nonaboriginal people. The aboriginal people who committed suicide were generally younger than their nonaboriginal counterparts (Table 2). There was no significant difference in the mean age of the aboriginal suicide victims living on and off reserve (Table 3).

There was a preponderance of suicides among boys and men in both populations, although the proportion of girls and women who committed suicide was higher among aboriginal than among nonaboriginal people (Table 2). There was no significant difference in sex among the aboriginal people living on and off reserve who committed suicide (Table 3). The age- and sex-specific suicide rates in the aboriginal and nonaboriginal populations are shown in Fig. 1.

Blood alcohol levels were tested in 80% of the aboriginal people who committed suicide, a significantly higher rate of testing than among the nonaboriginal people who committed suicide, of whom 73% were tested ($p < 0.02$). The mean blood alcohol level among the aboriginal people was higher than that among the nonaboriginal people who committed suicide (Table 2). An alcohol level above 17 mmol/L (the legal limit for driving in Manitoba) was detected in 28.3% of the nonaboriginal and 65.4% of the aboriginal people who committed suicide. Severe intoxication (a blood alcohol level of 43 mmol/L or higher) was detected in 10.3% of the nonaboriginal and 30.2% of the aboriginal people. The difference in mean alcohol levels between the aboriginal people living on and off reserve was not significant (Table 3). Because of the highly skewed distribution of blood alcohol levels, with 16.8% of those tested showing no detectable alcohol, we divided the sam-

Table 1: Suicides in the aboriginal and nonaboriginal population of Manitoba, 1988 to 1994, by age group

Age group, yr	No. (and rate per 100 000 population per year)			
	Aboriginal			
	On reserve	Off reserve	Total	Nonaboriginal
10–14	2 (6.7)	3 (5.1)	5 (5.6)	4 (0.9)
15–19	25 (88.6)	31 (51.7)	56 (63.5)	45 (9.6)
20–24	21 (83.9)	31 (59.5)	52 (68.5)	69 (14.5)
25–34	38 (98.7)	34 (32.6)	72 (50.4)	165 (14.5)
35–44	2 (8.4)	23 (32.5)	25 (26.4)	162 (15.6)
45–54	4 (24.9)	8 (23.2)	12 (23.8)	119 (16.9)
55–64	2 (19.3)	0	2 (6.8)	84 (13.8)
≥ 65	3 (29.1)	0	3 (11.6)	154 (16.5)
All ages	97 (52.9)	130 (31.3)	227 (38.0)	802 (13.8)
Age-standardized rate*			(31.8)	(13.6)

*Per 100 000 population per year, based on the total Manitoba population according to the 1991 census as the standard (direct method).

Table 2: Characteristics of aboriginal and nonaboriginal people who committed suicide

Characteristic	Aboriginal people *n = 227*	Nonaboriginal people *n = 802*	*p* value
Age, mean (and standard deviation [SD]), yr	27.0 (10.8)	44.6 (18.8)	< 0.001
Sex, no. (and %) female	68 (30.0)	154 (19.2)	< 0.001
Blood alcohol level,* mean (and SD), mmol/L	28 (23)	12 (20)	< 0.0001
Previous psychiatric treatment, no. (and %)	15 (6.6)	176 (21.9)	< 0.0001

*For this characteristic, the denominator was 182 for aboriginal and 583 for nonaboriginal people.

ple into those with "positive" and "negative" results of blood alcohol tests. We performed a stepwise multiple logistic regression analysis to determine factors that predicted a detectable blood alcohol level (Table 4). Independent variables in the model included age, sex, aboriginal status and residence on reserve. Only aboriginal status and age were found to be significant independent predictors of the presence of alcohol. Older people were less likely to have alcohol in their blood. Aboriginal status was associated with almost 3 times the risk of having a detectable blood alcohol level at the time of death (odds ratio [OR] 2.61, 95% confidence interval [CI] 1.76 to 3.88).

The aboriginal people who committed suicide were less likely to have received previous psychiatric treatment than their nonaboriginal counterparts (Table 2). There was no significant difference in this measure between the aboriginal people living on and off reserve (Table 3). We also investigated the relation between previous psychiatric treatment and age, sex, aboriginal status and reserve residence with a stepwise multiple logistic regression analysis (Table 4). Only aboriginal status and sex were significant independent predictors of previous treatment, with women being more likely to have used some psychiatric service. The aboriginal people were only one-fifth as likely to have obtained psychiatric care as the nonaboriginal people (OR 0.22, 95% CI 0.12 to 0.38).

The choice of method of suicide differed between the aboriginal and the nonaboriginal people (Table 5). When

Table 3: Characteristics of aboriginal people living on and off reserve who committed suicide*

Characteristic	On reserve *n = 96*	Off reserve *n = 131*
Age, mean (and SD), yr	26.9 (12.4)	26.9 (9.6)
Sex, no. (and %) female	27 (28.1)	41 (31.3)
Blood alcohol level,† mean (and SD), mmol/L	30 (23)	26 (23)
Previous psychiatric treatment, no. (and %)	5 (5.2)	10 (7.6)

*None of the differences between groups was significant.
†For this characteristic, the denominator was 85 for aboriginal people living on reserve and 97 for those living off reserve.

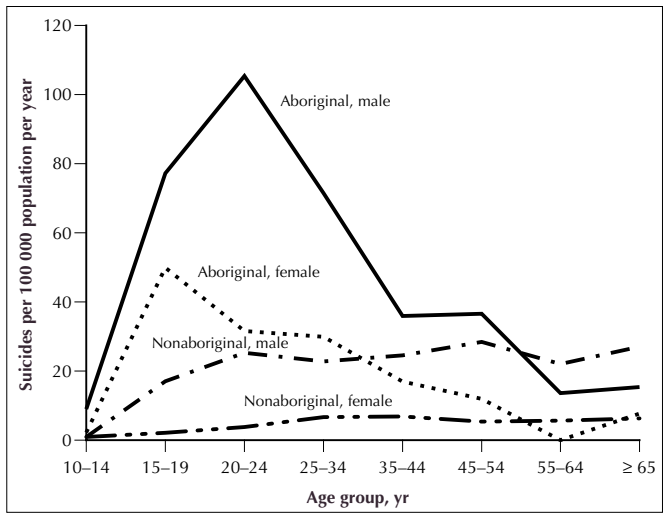

Fig. 1: Suicide rates among aboriginal and nonaboriginal men and women in Manitoba, 1988 to 1994, by age group.

Table 4: Results of logistic regression analyses, for which independent variables examined were aboriginal status, age, sex and residence on a reserve (only significant variables are shown)

Dependent variable	Independent variable	ß	Standard error of the mean	*p* value
Having a detectable blood alcohol level upon death *n = 765*	Aboriginal status	0.82	0.17	< 0.0001
	Age	–0.017	0.004	< 0.001
Previous psychiatric treatment *n = 1029*	Aboriginal status	–1.54	0.29	< 0.0001
	Sex	0.97	0.18	< 0.0001

Table 5: Methods of suicide used in Manitoba

Method	No. (and %) of suicides: Aboriginal people *n = 227*	Nonaboriginal people *n = 802*
Use of firearms	59 (26.0)	264 (32.9)
Hanging or asphyxiation	118 (52.0)	195 (24.3)
Carbon monoxide poisoning	2 (0.9)	126 (15.7)
Drowning	1 (0.4)	23 (2.9)
Fall	3 (1.3)	23 (2.9)
Overdose	34 (15.0)	126 (15.7)
Poisoning	2 (0.9)	9 (1.1)
Other	8 (3.5)	36 (4.5)

the methods were combined into 4 categories (firearms, hanging, overdose and other), the difference between the 2 groups was statistically significant ($p < 0.0001$). The most striking finding was the much higher use of hanging or asphyxiation as a method of suicide among the aboriginal people. These methods accounted for more than half of the suicides in this group. By contrast, the aboriginal suicide victims rarely resorted to carbon monoxide poisoning.

Discussion

Our results show that the pattern and profile (incidence, age and sex distribution, involvement of alcohol, previous use of psychiatric services and method) of suicides in the aboriginal population in Manitoba differed significantly from those of suicides in the nonaboriginal population. Furthermore, these discrepancies between the aboriginal and nonaboriginal people who committed suicide remain, whether one examines the on- or off-reserve aboriginal population. This observation supports the view that ethnic or cultural affiliation contributes to the higher rate of suicide in Manitoba's aboriginal population.

The crude suicide rate among aboriginal people was 2.8 times that in the population at large. When standardized rates were compared, the risk remained 2.3 times higher among aboriginal people. Overall, on and off reserve, we confirmed that the greatest discrepancy in suicide rates was in the younger groups. Among adolescents 15 to 19 years of age, the suicide rate among aboriginal people was nearly 7 times that among nonaboriginal adolescents. An interesting finding was that among older aboriginal people (55 and older) the suicide rate was lower than among nonaboriginal people in the same age group (Fig. 1). In fact, there were no suicides among elderly aboriginal people off reserve during the study period. This may reflect a cohort effect, cultural factors or some other protective effect conferred by aging that is unique to this population and deserves further investigation.

In most populations, suicides among men outnumber those among women. In our study, the ratio of men to women among the aboriginal people who committed suicide was 2.3 to 1, compared with a ratio of 4.2 to 1 among the nonaboriginal people who committed suicide. A study of suicides on Manitoba reserves from 1973 to 1982 showed that the ratio of men to women was 5.4 to 1.[17] It appears that suicide among women has increased in importance during the period between the 2 studies. The suicide rate among adolescent girls 15 to 19 years of age was 23.4 times higher among aboriginal than among nonaboriginal girls.

Aboriginal suicide victims are more likely than nonaboriginal suicide victims to be given a postmortem test for blood alcohol level by the O-CME. One explanation for this discrepancy is that the O-CME is aware of the association between alcohol use and violent death in the aboriginal population and that this influences the index of suspicion. Among people who committed suicide and were tested for blood alcohol level, there are striking differences between the aboriginal and the nonaboriginal cases (Table 4). This result is in keeping with several other reports that have associated alcohol intoxication with violent death in native populations.[11,12,14] A high blood alcohol level at the time of death may reflect an association between acute alcohol intoxication and suicidal behaviour. Alternatively, the association may be due to a relation between sustained alcohol use and psychologic distress (for example, depression). In either case, the results emphasize the importance of preventive efforts directed toward moderation of alcohol use.

The only measure of help-seeking behaviour available in the O-CME records is an indication of whether the suicide victim was known to be seeking psychiatric assessment or treatment. Our results show that the aboriginal suicide victims were much less likely to have received psychiatric care than their nonaboriginal counterparts. These results were not simply related to a lack of access to psychiatric services on reserves, since the aboriginal people living off reserve were equally unlikely to have used psychiatric services. They may be related to a general tendency for aboriginal people not to seek assistance for psychologic distress or suicidal ideation. Alternative explanations include a lower degree of premeditation among aboriginal suicide victims or a tendency for aboriginal people to use nonmedical resources such as elders or native healers. Further investigation into the pattern of help-seeking behaviour among aboriginal people before suicide is warranted, as there may be significant implications for preventive efforts. Electronic data linkage between O-CME records and the health insurance database may provide a clearer profile of suicide victims' health care use before their death.

The method used in more than 50% of aboriginal suicides was hanging or asphyxiation. This method of suicide predominated both on and off reserve, whereas it was substantially less common in the nonaboriginal population. An earlier study of suicide in Manitoba showed that hanging was used in only 26% of suicides among aboriginal people and was far less common than the use of firearms.[17] A study in British Columbia showed that hanging was used in approximately one-third of suicides among aboriginal people.[5] Since this method is almost universally available, consideration of cultural factors that may account for the difference in the use of hanging between aboriginal and nonaboriginal people may prove the most rewarding line of investigation. Unfortunately, its universal availability also precludes preventing suicide

through reducing access. In contrast to the nonaboriginal suicide victims, the aboriginal suicide victims rarely chose carbon monoxide poisoning. Factors affecting private access to motor vehicles may account for this difference. The use of firearms as a means of suicide has declined, although there has been no change in their availability; we have no explanation for this.

In the absence of specific data, one could speculate that the serious problem of suicide among Manitoba's aboriginal people is accounted for by only a small number of economically depressed reserves. For example, a recent study conducted in British Columbia reported that the excessive suicide rate was observed primarily among the most disadvantaged reserve populations.[5] However, our data do not indicate that the problem of aboriginal suicide is confined to the reserve population of Manitoba. The overall rate of suicide among aboriginal people on reserve was higher than that off reserve; however, both rates were considerably higher than the nonaboriginal rate. Suicides committed on and off reserve did not differ according to the victim's mean age, sex, blood alcohol level or previous psychiatric care.

Aboriginal suicide figures derived on a small scale, over a short period or exclusively from jurisdictions with extremely high or "epidemic" suicide rates may be misleading. This study covers an entire province during a 7-year period. However, it has several shortcomings. First, the O-CME records are collected over time and may therefore be influenced by changing departmental trends. The records are made by different people in the field and on a case-by-case basis. Some of the specific conclusions of this study rely on the validity, stability or at least random variation in such factors as the postmortem assignment of aboriginal status or cultural affiliation, the decision to investigate the involvement of alcohol or drugs and the ascertainment of previous psychiatric care. As well, the O-CME may underreport suicide as the cause of death. There are, however, many precedents in the use of such data, and the degree to which suicide rates are under-reported has been estimated.[18] In fact, suicide among aboriginal people in Canada cannot be studied through the use of such traditional data sources as vital statistics records, since ethnic background is not recorded on the death certificates in any jurisdiction. In several provinces where treaty Indian status can be identified from health insurance registration numbers, it may be possible to link the health insurance database with vital statistics records; however, aboriginal groups other than treaty Indians would still be missed.

Suicide among aboriginal people is a major public health problem. Quantifying its risk and describing the demographic and clinical pattern are only the first steps in addressing the problem. The risk factors that promote suicide need to be identified in order to plan and implement preventive interventions.

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Reprint requests to: *Dr. Murray W. Enns, PsycHealth Centre, PZ430–771 Bannatyne Ave., Winnipeg MB R3E 3N4; fax 204 787-4879*