

Suicide Cases in New Brunswick From April 2002 to May 2003: The Importance of Better Recognizing Substance and Mood Disorder Comorbidity

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Objective: To investigate all suicide cases that occurred in New Brunswick in the 14 months spanning April 1, 2002, to May 31, 2003, to determine 6-month and lifetime prevalence rates of psychopathology in the deceased.

Method: We used 2 psychological autopsy methods: direct proxy-based interviews and medical chart reviews, together with telephone contacts with informants. Consensus DSM-IV diagnoses were formulated by clinical panels on the basis of the Structured Clinical Interviews I and II for DSM-IV complemented by medical charts.

Results: Of the 109 suicide deaths identified by the coroner at the time of the study, we were able to investigate 102. At time of death, 65% of the suicide victims had a mood disorder, 59% had a substance-related disorder, and 42% had concurrent mood and substance-related disorders. The lifetime prevalence of substance-related disorders among these suicide victims was 66%. Finally, 52% of the suicide victims presented with a personality disorder; one-half of these were of the cluster B type.

Conclusions: Although treatment of depression has frequently been recognized as the focal point of clinically based suicide-prevention efforts, our results underscore substance-related disorders as a key dimension of completed suicide. Suicide-prevention programs should be designed to address this problem more directly.

(Can J Psychiatry 2006;51;581–586)

Information on funding and support and author affiliations appears at the end of the article.

Clinical Implications

- Substance-related disorders have been underrated as a key dimension in completed suicide.
- Recognize the importance of substance and mood disorder comorbidity as the major comorbidity in suicide risk.
- Integrate treatment of substance-related disorders and comorbidity in suicide-prevention programs.

Limitations

- Third-party assessment may affect identification of mental and substance disorders.
- To investigate the entire population, we used 2 investigative methods, one of which was based on a review of medical records that possibly reported substance abuse incompletely.
- The extent of unmet need for care and services is not reported in this study, which limits conclusions regarding specific policy implications.

Key Words: suicide, depression, addiction problems, psychological autopsy

Suicide is a major public health concern because it ranks among the top 10 causes of death for individuals of all ages in most Western countries (1). Over the past 30 years, numerous studies have examined the relation between suicide and mental disorders (2–5). These studies have identified several risk factors for suicide completion, including previous suicide attempts, male sex, family history of suicide, and the presence of psychiatric problems (3–7). Among these factors, psychiatric morbidity is a key predictor of suicide.

The standard method used to assess psychopathology in suicide completers is the psychological autopsy (3). Under this proxy-based interview process, best informants provide data that serves to investigate dimensions of interest regarding the deceased. Psychological autopsy studies have demonstrated that approximately 90% of suicide cases presented a psychiatric disorder detectable by means of structured diagnostic procedures (8,9).

Psychological autopsy studies have been based on various samples or on clinical audits of patients in contact with mental health services. This possibly introduced a bias in terms of the distribution of psychopathology in suicide death. Only one study has ever examined all cases of suicide in a given year at the population or national level (10). In 1987, the Finnish government launched a major study and collected data on 1397 suicide deaths. Lönnqvist (10) and his team noted overall high rates of depression (51%), substance abuse (56%), and personality disorders (57%) among the suicide victims (11). More recently, the New Brunswick government undertook a similar endeavour to investigate suicides in the province.

The New Brunswick Study

The annual report of New Brunswick's chief coroner indicated 94 deaths resulting from suicide in the 2001–2002 fiscal year, for an incidence of 12.4 per 100 000 inhabitants. The most recent data available from Statistics Canada estimate the national suicide rate to be 13.4 per 100 000 inhabitants (12). New Brunswick's suicide rate over the past 10 years has consistently hovered around the national rate, being just above at times but, more often, slightly below. New Brunswick recorded a slightly higher suicide rate per 100 000 inhabitants over the years 1993–1998 than did the 3 other Atlantic Provinces and matched Nova Scotia's rate for 1999. Each year, 100 individuals on average commit suicide in New Brunswick, and roughly 800 are hospitalized after attempting suicide (13).

Our study aimed to identify the personal and social circumstances that led the identified New Brunswickers to commit suicide, with the goal of proposing strategies for improving the services offered to suicidal individuals and their families. The study tracked events and circumstances that marked the lives of the suicide victims, with the following aims:

1. To chart the development of mental health problems, determine the sequence in which the initial difficulties appeared, and track their evolution over time.
2. To survey the accumulation of psychosocial risk factors and protective factors.
3. To describe help-seeking behaviours and use of health services.
4. To evaluate how well practitioners, programs, and the health and social services system in New Brunswick responded to service needs.

This article reports on the methodology employed in the study and on the psychological autopsy results regarding current and lifetime mental disorders.

Methods

Over the study period spanning April 1, 2002, to May 31, 2003, the chief coroner of New Brunswick, after investigation, reported 109 suicide deaths. Seven of these deaths were not investigated owing to overriding legal factors, the absence of informants (the deceased had completely cut himself off from society), or the fact that the family questioned the study's relevance. These 7 cases were all suicide deaths involving men aged 27 to 59 years. They did not differ from the others in terms of demographic factors.

Recruitment of Informants

The Coroner's Office sent a letter to the families of the suicide victims explaining the study and then followed up with a telephone call. The names and telephone numbers of families interested in taking part in the study were forwarded to the research team. The research project coordinators then called the families to explain the objectives of the study and to request their collaboration. If a family agreed to participate, we asked whether we could interview the family members or the person who had known the suicide victim best. A mental health clinician trained as an interviewer then contacted this person to arrange an appointment. The interview program did not start until 3 months after the death to give the bereaved sufficient time to begin the grieving process. We did not undertake any interviews without the written consent of the next of kin. At least 2, and as many as 6, interviews were conducted with each informant. On average, 30 hours of data gathering, including clinical support to families and clerical work, were invested for each suicide case. For the clinical interview, we used a conversational approach to data gathering; duration seldom posed a problem.

After each interview, the clinician systematically followed up with the families by telephone and arranged for another appointment to complete the data collection process and, if needed, to offer support and care.

Data Gathering

We used 1 of 2 investigative approaches, depending on the extent of the family's involvement in the study, since some families were more reluctant to participate in face-to-face interviews. With the first approach, 55 families were directly interviewed to gather information on the lifelong course of the suicide victim's mental health up to suicide completion and to identify both the significant events in his or her life trajectory and all help-seeking behaviours. Structured Clinical Interview for DSM-IV (SCID) I and II questionnaires were administered to an informant who had known the deceased well (5,14,15). Additionally, we examined the hospital files (both inpatient and outpatient) to corroborate the information gathered and to determine what resources the deceased had used. A case vignette was then drafted and discussed by a panel of experts who used consensus methods to determine the post mortem diagnosis.

With the second investigative approach, we searched the suicide victim's files for information and had telephone conversations with most of the 47 families who did not wish to meet with us. The interviewers examined hospital medical records to note 6-month and lifetime diagnoses and the respective diagnostic criteria that were met. In all cases, socio-demographic characteristics were compiled and vignettes were completed to summarize the information gathered on life history and service use. Again, a case vignette was submitted to a panel of experts who determined the post mortem diagnosis.

Finally, to assess the comparability between the 2 approaches, we compared the subgroup of suicide victims investigated by means of direct proxy-based interviews with the subgroup assessed through chart reviews and phone-based interviews. No significant differences emerged in terms of frequency of mood disorders, anxiety disorder, or substance-related disorders in the last 6 months. Also, the number of cases with at least one 6-month and lifetime diagnosis, respectively, was similar: 93% and 95% in the last 6 months ($P < 0.417$) and 86% and 83% lifetime ($P < 0.470$). As for the lifetime results, the only differences observed concerned mood disorder (44% and 60%, respectively; $P < 0.080$) and schizophrenia (4% and 13%, respectively; $P < 0.267$). However, none of these proved significant. Similarly, no difference was found regarding the number of individuals with a personality disorder (54% and 47%, respectively; $P < 0.281$).

Results

Sociodemographic Profile

The sample included 85 men and 17 women. Most (95%) were of European ethnicity. Most of the suicides (63%) occurred between the ages of 30 and 59 years (ranging from

age 17 to 82 years); 41% of the deceased were part of a couple; 37% were separated, divorced, or widowed; and 22% were single. The most common suicide methods were hanging ($n = 39$), use of a firearm or sharp instrument ($n = 34$), and drug overdose or carbon monoxide poisoning ($n = 19$). Jumping and drowning accounted for the other deaths ($n = 10$).

The suicide victims tended not to have a high level of formal education: 37% had not earned a high school diploma or the equivalent, 17% had a high school diploma, and only 10% had any postsecondary studies to their credit. However, educational level was unknown for just over one-third (36%) of the deceased. More than one-half of the subjects were unemployed at time of death, and almost 19% were deemed disabled.

Psychopathological Profile

Table 1 gives the 6-month and lifetime (before the last 6 months) prevalence of mental health disorders among suicide victims. As expected, 95% presented a mental health disorder, with 95% and 52%, respectively, meeting the criteria for an Axis I or Axis II condition; 72% had comorbid conditions.

Concerning the 6-month prevalence of specific Axis I disorders, mood disorders (66%) and substance abuse or dependence disorders (59%) were the most common among the deceased. In decreasing order of prevalence, the most common substance disorders were alcohol dependence, drug dependence, alcohol abuse, and drug abuse. We found pathological gambling in 5 cases. Regarding mood disorders, 41% of the suicide victims met the criteria for major depressive disorder, 3% for dysthymia, 3% for bipolar I disorder, and 8% for adaptation disorder. Eighteen cases were also diagnosed with an anxiety disorder in the final 6 months of life.

Regarding lifetime prevalence (that is, before the last 6 months), substance abuse and dependence disorders were the most frequent conditions (66%), followed by mood disorders (51%).

Personality disorders were diagnosed in 52% of the suicide victims. Only one individual presented with a cluster A personality disorder (schizoid personality disorder). Almost one-half presented with a cluster B personality disorder (16 with borderline personality disorder and 9 with antisocial personality disorder). Seventeen individuals were found to have a cluster C personality disorder (4 had dependent personality disorder, 7 had obsessive-compulsive disorder, 3 had avoidant personality disorder, 2 had passive-aggressive personality disorder, and 1 had depressive disorder). Finally, 10 individuals were diagnosed with a personality disorder not otherwise specified, with marked borderline or antisocial traits.

Table 1 Number of individuals with an Axis I or II disorder (*n* = 102)

	Last 6 months <i>n</i> (%)	Lifetime <i>n</i> (%)
Mood disorder (<i>n</i> with at least one disorder)	67 (66)	51 (50)
Major depressive disorder	42 (41)	34 (33)
Dysthymia	3 (3)	5 (5)
Depression NOS	10 (10)	9 (9)
Bipolar I	3 (3)	2 (2)
Bipolar NOS	1 (1)	1 (1)
Adaptation disorder	8 (8)	3 (3)
Abuse or dependence problem (<i>n</i> with disorder)	60 (59)	67 (66)
Alcohol dependence	40 (39)	42 (41)
Drug dependence	34 (33)	35 (34)
Alcohol abuse	17 (17)	32 (31)
Drug abuse	17 (17)	20 (20)
Anxiety disorder (<i>n</i> with disorder)	18 (18)	19 (19)
Generalized anxiety	6 (6)	4 (4)
Panic disorder	1 (1)	5 (5)
Obsessive–compulsive disorder	0 (0)	4 (4)
Posttraumatic stress disorder	4 (4)	5 (5)
Anxiety disorder NOS	1 (1)	1 (1)
Psychosis and schizophrenia	7 (7)	8 (8)
Pathological gambling	5 (5)	6 (6)
Personality disorder (<i>n</i> with disorder)	53 (52)	53 (52)
Cluster A	1 (1)	1 (1)
Cluster B	25 (24)	25 (24)
Cluster C	17 (17)	17 (17)
Personality disorder NOS	10 (10)	10 (10)
No disorder	6 (6)	13 (13)
Single disorder	23 (23)	14 (14)
Comorbidity	73 (72)	75 (74)
Total with at least one diagnosis	96 (94)	89 (87)
NOS = not otherwise specified		
Cluster A: paranoid, schizotypal, schizoid		
Cluster B: histrionic, narcissistic, borderline, antisocial		
Cluster C: avoidant, dependent, obsessive–compulsive, depressive, passive-aggressive		

As for the presence of comorbidity, 54% of the suicide victims had both a substance dependence and another disorder, 55% had a mood disorder and a second disorder (specifically, drug abuse or dependence or personality disorder), and 42% had a mood disorder and a substance-dependence disorder. Of the cases with only one identified disorder, 16% met the criteria for a depressive disorder and 7% for a substance-related disorder.

Discussion

In this study, we investigated psychopathology in 102 of the 109 individuals who committed suicide in the province of New Brunswick from April 1, 2002, to May 31, 2003. Using psychological autopsy methodology with standardized instrument procedures, we found high 6-month rates of mood disorder (66%) and substance-related disorders (59%). Regarding lifetime prevalence, substance abuse and dependence disorders were the conditions most frequently identified (66%), followed by major depressive disorder (50%) and personality disorders (52%).

More than two-thirds of the subjects had a substance-related problem at the time of death, which makes this one of the highest percentages ever encountered in this type of study. In a recent metaanalysis of the psychiatric diagnoses of 3275 suicide victims, Arseneault-Lapierre indicated that the average rate of substance-related disorders in 27 different psychological autopsy studies varied from 19% to 40% (9). However, a few other studies have identified high rates of substance-related behaviour, for example, 56% in the Finnish study (16) and 43% in the Northern Ireland study (17).

This might suggest that alcoholism is more prevalent in New Brunswick. However, according to the Canadian Community Health Survey (12), the rate for New Brunswick is 9.9%, compared with 8.8% for Canada as a whole and 8.5% to 12.5% for the other provinces. Thus the rates observed in New Brunswick for alcohol dependence are not higher than those observed in the rest of Canada. As well, Canada has a lower per capita consumption rate than the United States, the United Kingdom, France, or Finland (18).

However, it is possible that individuals in a vulnerable state drink more than those in the general population. In a prospective study that investigated suicide attempters admitted to Philadelphia General Hospital over 5 to 10 years, alcoholism was the strongest single predictor of subsequent completed suicide (18). Moreover, the 5-year report of the National Inquiry into Suicide and Homicide by People with Mental Illness (19) revealed that 40% of individuals in contact with mental health services who committed suicide in England and Wales had a history of alcohol misuse (with rates of 53% in Scotland and 62% in Northern Ireland), and 19% had misused alcohol and drugs (with rates of 26% in Scotland and 27% in

Northern Ireland). Lastly, a Northern Ireland study of suicide cases found that the estimated risk for suicide when current alcohol misuse or dependence were present in a convenience sample was 8 times as high as in the absence of any such disorder (20).

Consequently, the data obtained in this study of suicide death, and in a few other studies where all suicide deaths over a given period were taken into account, suggest that the rates of substance-related disorders may be greater than expected in populations of suicidal individuals. Further, apart from the increased associated risk for suicidal behaviour, it is important to recognize the long-term destructive repercussions on the personal, family, and social lives of people with a substance-related problem.

Limitations of the Approaches to Determine Post Mortem Diagnoses

The psychological autopsy method that uses informants to assess psychopathology in deceased persons has several limitations. These include factors related to the method of third-party assessment, especially when information is gathered from a single informant (3), recall biases, and imprecise information (21,22). However, the method has been used for decades now, and a series of studies in the past decade established with good-to-excellent reliability the concordance between DSM diagnoses based on informant report and those based on data garnered from medical charts (23) or formulated through other comparative methods (24–26). In our own series of studies, we demonstrated that proxy-based diagnoses were rarely modified (less than 3%) after a subsequent review of medical records (5). We also established excellent interrater diagnostic reliability when diagnoses of psychopathology were rated independently by a panel of judges (5,7). This study also supports the validity and comparability of diagnoses obtained through the informant interview procedure and through data gleaned from medical charts. Assuming that the yield of data obtained from informants is similar to that from medical charts, our results indicate that, where families were reluctant to participate, data were similar to the cases where families agreed to be interviewed. We cannot exclude, however, the impact of underreporting substance-related problems in specialist mental health care casenotes that was observed in the early 1990s, at least (27).

Conclusion

Although the number of mood disorders, substance-related behaviours, and personality disorders found in this investigation of suicides in New Brunswick is high and may not be unique to suicide, this study has 2 principal strong points: it investigated almost the entire population who committed suicide in a given year, and it used systematic methods of

investigation. Our findings stress the need for preventive efforts to focus on early treatment of addiction and mental health problems. Many global suicide-prevention strategies that are based on data obtained in psychological autopsy studies over the past 30 years have identified detection and treatment of depression as a major objective in the campaign to reduce suicide rates (28). Although there is no disputing that treatment of depression is an important aspect of suicide prevention, the findings of the New Brunswick study suggest that prevention of substance-related behaviour should also be a primary goal in the Canadian national strategy for suicide prevention. Better suicide prevention calls for a more concerted effort on the part of specialized mental health and addiction services, as well as greater access to the latter. Results for lifetime and 6-month diagnoses show that dependence problems could have been addressed earlier. National alcohol policies should be made to dovetail with mental health and suicide-prevention policies (20) to promptly and better manage suicide risk in populations.

Funding and Support

This research was supported by the Government of New Brunswick.

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Manuscript received November 2005, revised, and accepted March 2006.

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Résumé : Les cas de suicide au Nouveau-Brunswick d'avril 2002 à mai 2003 : l'importance de mieux reconnaître la comorbidité du trouble lié à une substance et du trouble de l'humeur

Objectif : Examiner tous les cas de suicide qui sont survenus au Nouveau-Brunswick dans les 14 mois entre avril 2002 et mai 2003, pour déterminer les taux de prévalence de 6 mois et de durée de vie de psychopathologie chez les personnes décédées.

Méthode : Nous avons utilisé 2 méthodes d'autopsie psychologique : les entrevues directes avec les proches et l'examen des dossiers médicaux, ainsi que des communications téléphoniques avec les informateurs. Les diagnostics par consensus du DSM-IV ont été formulés par des équipes cliniques selon les entrevues cliniques structurées pour le DSM-IV (SCID) I et II, complétées par les dossiers médicaux.

Résultats : Sur les 109 décès par suicide identifiés par le coroner au moment de l'étude, 102 ont pu faire l'objet de recherches. Au moment du décès, 65 % des victimes du suicide souffraient d'un trouble de l'humeur, 59 % souffraient d'un trouble lié à une substance et 42 % souffraient d'un trouble de l'humeur et d'un trouble lié à une substance co-occurents. La prévalence de durée de vie des troubles liés à une substance chez ces victimes du suicide était de 66 %. Finalement, 52 % des victimes du suicide présentaient un trouble de la personnalité, dont la moitié étaient du type du groupe B.

Conclusions : Bien que le traitement de la dépression ait souvent été reconnu comme étant le point central des efforts cliniques de prévention du suicide, nos résultats soulignent les troubles liés à une substance comme étant une dimension clé du suicide complété. Les programmes de prévention du suicide devraient être conçus pour tenir compte de ce problème plus directement.