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Death by Suicide among Canadian Medical Students: A National Survey-Based Study

Rebecca Zivanovic, MD[1], Janette McMillan, MD, FRCPC[2], Chris Lovato, PhD[3], and Christina Roston, MD, FRCPC[2]

Abstract

Objective: To estimate a rate of death by suicide in the Canadian medical student population and examine the prevalence of institutional response policies for suicide.

Methods: A survey was sent to all 17 Canadian medical undergraduate programs (MDUPs) to collect information on deaths by suicide over the past 10 years. In the case of a reported suicide, basic demographic data was collected. Respondents were asked to indicate whether internal statistics or response policies for suicide existed at their MDUP.

Results: Responses were obtained from 16 of 17 (94%) MDUPs. Six suicides (50% female) were reported over the ten-year period from 2006 to 2016. The estimated cause-specific mortality rate was 5.9-8.7/100,000 medical students/year. There were seven (44%) MDUPs that kept statistics on student deaths including suicides and 10 (63%) reported having policies or guidelines regarding what to do in the event of a suicide.

Conclusions: Our estimated suicide rate falls within previously reported rates in medical students. While this may be lower than the national rate for Canadians between the ages of 20-30 years old, any suicide in the medical student community must be an impetus for national dialogue and further study. A strategy is needed to better define the prevalence, risk factors for and impact of medical student suicide in Canada.

Keywords

medical student, suicide, undergraduate, mental health

Medical students experience high rates of psychological distress[1,2] and lower mental quality of life than their age-matched counterparts.[1,3,4] A recent meta-analysis found the pooled prevalence of depression or depressive symptoms and suicidal ideation to be 27.2% and 11.1%, respectively.[5] The reported prevalence of self-reported suicide attempt ranges from 0% to 6.4% across 37 studies of medical students.[6] Rates of clinically diagnosed depression and self-reported history of suicide attempt have been found to increase over the years of undergraduate medical training, from 3% to 10% and 0.7% to 2%, respectively.[7] Burnout is an increasingly used measure of distress in medical trainees and has been shown to be a predictor of suicidal ideation in this population.[8] Approximately 50% of American medical students experience burnout during their training.[8] Recovery from burnout has been associated with a decreased rate of suicidal ideation, independent of symptoms of depression, suggesting burnout and suicidal ideation are related.[8]

Despite existing evidence that suicidal thinking and attempts occur in medical students and the fact that suicide among practicing physicians is higher than the general population,[9-11] there is minimal information in the literature on rates of completed suicide in medical students. The suicide rate in Canadian undergraduate medical students and existence of suicide response guidelines in Canadian medical undergraduate programs (MDUPs) is not known. We sought to elucidate these data through a national, survey-based study of Canadian medical schools.

[1] Resident, Psychiatry, University of British Columbia, Vancouver, British Columbia, Canada
[2] Student Affairs, Faculty of Medicine, University of British Columbia, Vancouver, British Columbia, Canada
[3] School of Population & Public Health, University of British Columbia, Vancouver, British Columbia, Canada

Corresponding Author:
Christina Roston, MD, FRCPC, Student Affairs, Faculty of Medicine, Gordon and Leslie Diamond Health Care Centre, 2775 Laurel Street, 8th Floor, Vancouver, British Columbia, V5Z 1M9, Canada.
Email: christina.roston@ubc.ca

Methods

This is a Canadian survey-based study of medical school leaders working in MD undergraduate student affairs offices (or equivalent) and was approved by the University of British Columbia's Behavioural Research Ethics Committee. Online surveys, using a private institutional survey tool supported by Fluid Surveys, were distributed via email to the associate dean, assistant dean, or director of student affairs at all 17 Canadian medical schools.[12] The introductory email and survey were offered in English and French. Postgraduate training programs were not included (i.e., residency and fellowship programs). Recipients of the survey were asked to forward the survey to others who could provide more accurate responses (e.g., a former dean of student affairs). Reminders were sent to institutions until a response was elicited (either participation or nonparticipation). The 8-item electronic survey collected basic data on the institution as well as the survey respondent to avoid double counting of outcomes in the case that more than 1 representative from a given school responded. The survey included questions about whether the respondent was aware of any suspected or confirmed deaths by suicide in the medical student population of their school from 2006 to 2016. In the cases of a reported suicide, basic demographic data were collected, including the year of the death, year of study of the student at the time of death, and their sex, if known. Questions regarding the presence of individual institutional suicide statistics collection and response policies were also included. There was an area at the end of the survey for the respondent to share any additional thoughts they had on the subject, feedback for the study, or further explanation of any statistics collection or response policies. The survey text is provided as the appendix.

Survey results were reviewed and tabulated. An estimated cause-specific mortality rate (per 100 000 medical students/year) for deaths by suicide was calculated using publicly available medical school census data published by the Association of Faculties of Medicine of Canada.[13] The rate was calculated first over the prespecified study interval (2006-2016). However, because of concern that the long, retrospective time period had resulted in unreported outcomes in earlier years, the rate was also calculated based on the latter 5 years of the study interval (2011-2016).

Results

Representatives from all 17 MDUPs provided a response to the survey request, with 16 programs (94%) participating. Based on their respective sizes, the participating schools represented 94% of Canadian medical students. All but 1 MDUP was represented by a single respondent, whereas 1 program provided 2 completed surveys from separate respondents, for a total of 17 surveys available for analysis. A total of 6 suicides (50% female) were reported during the study period. Five of the 6 deaths occurred in senior years of study (third year, fourth year, or the period immediately following graduation but prior to residency). All reported suicides occurred between 2010 and 2016.

Because of the low number of reported events, a reliable cause-specific mortality rate could only be estimated. When calculated over the intended 10-year period, the estimated suicide rate is 5.9/100 000 medical students/year. When calculated over the most recent 5 years, the rate is estimated at 8.7/100 000 medical students/year. Only 7 (44%) of the programs kept statistics on student deaths, including suicides. Ten (63%) of programs reported having some type of existing policy in place for what to do in the event of a suicide in their population.

Discussion

The present study identified 6 suicides in a sample representing 94% of Canadian MDUPs over 10 years. Most suicides occurred in senior years of study or prior to residency, and no sex bias was apparent. A suicide rate was estimated at 5.9 to 8.7/100 000 medical students/year. Only 44% of medical schools appear to keep records of student deaths, including suicides, and 63% have a response policy to suicide.

Our estimated suicide rate of 5.9 to 8.7/100 000 falls within the range of previously reported rates of 0 to 39.6/100 000 in the literature from 7 studies of completed suicide in undergraduate medical students.[14-20] The most recent study of medical student suicide was conducted in the United States and collected data between 2006 and 2011 with a 69% response rate.[14] This study reported a rate of 2.3/100 000.[14] Differing response rates (69% vs 94%) and underreporting due to stigma around suicide may account for these differences rather than a higher rate of suicide among Canadian medical students. A recent editorial indicates that resistance to open discussion of medical student suicide still exists.[21] In addition, when event rates are low, as in our study, estimates are more likely to vary.

From Statistics Canada, the most recent calculation of the suicide rate for the general population was 11.5/100 000.[22] When looking at appropriate age comparison groups for medical students, those numbers were slightly higher at 11/100 000 for ages 20 to 24, 11.7/100 000 for ages 25 to 29, and 12/100 000 for ages 30 to 34.[22] This suggests that unlike practicing physicians, medical students may be at a decreased risk of death by suicide compared with their age-matched counterparts in the general population. There are many other demographic, socioeconomic, and health-related variables, besides enrollment in medical training, that are not addressed in this study that may affect the suicide rate in medical students and make a comparison with the general population difficult. Data from the United States report a suicide rate in undergraduate college students of 7.5/100 000, which is consistent with the range observed in the present study.[23,24]

The main limitations of our study are the small target population, relatively low event rate, and dependence on participant knowledge and recall of deaths by suicide. For

example, the absence of a reported suicide between 2006 and 2010 suggests that more remote suicides may not have been reliably recalled. Other factors, such as privacy concerns, family preferences, and the stigma associated with suicide, may have led to underreporting of events to the schools. Students who withdrew from medical school prior to completion of their degree (perhaps for medical/mental health reasons) who may have ultimately gone on to die by suicide are a population that we believe was not captured in this study. We did not specifically ask if students were on leave at the time of their death. We have elected not to include details that were volunteered because of concerns this level of detail would lead to identification of certain cases.

Institutions are increasingly implementing strategies to address the mental health of their trainees. We hope that this work further promotes implementation of such programs and evaluation of their impact on medical student suicide. For those in search of resources, the American Foundation for Suicide Prevention has compiled a list of resources specific to physicians and medical trainees,[25] including prevention strategies and a handbook on what to do in the event of a suicide.[26]

Conclusion

Our results are an initial step in characterizing suicide in the Canadian medical student population. We hope that this research encourages MDUPs across the country to keep internal records regarding deaths by suicide (and other unexpected deaths) and to consider using response guidelines in the event of future suicides.

Further prospective work is required to document future deaths by suicide and to explore identifiable risk factors for completion of suicide in this population. Possibilities for this future work include a national reporting strategy or a longitudinal prospective study. This may allow for more reliable calculations of the suicide rate in this population moving forward and tracking of any trends that emerge. This is particularly important when specific suicide prevention programs are being designed and implemented. It may be valuable to expand next steps to include other populations (e.g., postgraduate medical trainees, withdrawn/dismissed medical students) and other mental health–related outcomes, including attempted suicide.

Appendix: Survey Questions

*Please note that the information in **Questions 1 and 2** will not be published in any form and will only be used to cross-reference data to ensure events are not double counted.*

1. What institution do you/did you work at?
   e.g., The University of British Columbia
2. In what role(s) and years?
   e.g., Dean of Student Affairs 2011-2015

Please note all of these questions are optional.

3. Have you personally known a medical student(s) in your institution who has committed suicide during their undergraduate studies?
   a. Yes/no
   b. If yes, how many have occurred?
      e.g., 2
   c. What years did this/these occur?
      e.g., 2007
   d. What year of study was the student in at the time?
      e.g., 4th year
   e. Was the student male or female?
4. Have you heard of medical students in your institution, not known to you personally, who have committed suicide during their undergraduate studies?
   a. Yes/no
   b. If yes, how many have occurred?
   c. And what years did this/these occur?
   d. What year of study was the student in at the time?
   e. Was the student male or female?
5. Do you know, or have you heard of, any medical students who have died while in medical school where the cause of death was unknown or due to a drug overdose?
   a. Yes/no
   b. If yes, how many have occurred?
   c. And what years did this/these occur?
   d. What year of study was the student in at the time?
   e. Was the student male or female?
6. To your knowledge, does your school keep statistics on student deaths and/or suicides?
7. Does your school have any policies or guidelines in place for what to do if a suicide dose occur in your medical school?
8. Do you have any other information you would like us to know regarding suicide in your medical school population? Or any thoughts in general about this study and the state of mental health in medical students?

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