Patterns of Health Care Usage in the Year Before Suicide: A Population-Based Case-Control Study

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Abstract

Objective: To compare the type and frequency of health care visits in the year before suicide between decedents and controls.

Patients and Methods: Cases (n=86) were Olmsted County, Minnesota, residents whose death certificates listed "suicide" as the cause of death from January 1, 2000, through December 31, 2009. Each case had 3 age- and sex-matched controls (n=258). Demographic, diagnostic, and health care usage data were abstracted from medical records. Conditional logistic regression was used to analyze differences in the likelihood of having had psychiatric and nonpsychiatric visits in the year before death, as well as in visit types and frequencies 12 months, 6 months, and 4 weeks before death.

Results: Cases and controls did not significantly differ in having had any health care exposure (P=.18). Suicide decedents, however, had a significantly higher number of total visits in the 12 months, 6 months, and 4 weeks before death (all P<.001), were more likely to have carried psychiatric diagnoses in the previous year (odds ratio [OR], 8.08; 95% CI, 4.31-15.17; P<.001), and were more likely to have had outpatient and inpatient mental health visits (OR, 1.24; 95% CI, 1.05-1.47; P=.01 and OR 6.76; 95% CI, 1.39-32.96; P=.02, respectively). Only cases had had emergency department mental health visits; no control did.

Conclusion: Given that suicide decedents did not differ from controls in having had any health care exposure in the year before death, the fact alone that decedents saw a doctor provides no useful information about risk. Compared with controls, however, decedents had more visits of all types including psychiatric ones. Higher frequencies of health care contacts were associated with elevated suicide risk.

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S uicide is an important public health issue for 2 main reasons: the size of its impact and the potential for its prevention. Suicide is the 10th leading cause of death in America, taking 41,149 lives in 2013 and representing 1.6% of all deaths in the United States.[1] For every one of these suicide deaths, countless others are affected, including the bereaved, community members, and providers.

Suicide prevention has gained national attention starting with the 1999 Surgeon General's Call to Action to Prevent Suicide, which was revised in 2012 to include an emphasis on the role of screening for suicide in primary care and emergency departments.[2] The idea that health care providers play a role in suicide prevention stems from research showing that 75% to 80% of all suicide decedents have

contact with the health care system in the year before their death.[3-5]

That the medical literature so often references that those dead by suicide have visited a doctor in proximity to their deaths makes it seem as if this fact alone can aid in predicting suicide. However, these studies almost never contain a nonsuicide comparator group and thus shed no light on whether there are any differences in patterns of health care usage in those committing vs those not committing suicides. A handful of case-control studies comparing patterns of health care utilization between suicide cases and members of the general population have been conducted in Canada,[6,7] Taiwan,[8] the United Kingdom,[9] Iceland,[10] and Denmark,[11] as well as among US military service members[12] and on an

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Indian reservation in the Upper Midwest.[13] These studies largely focus on specific types of visits rather than overall patterns of health care use; for example, outpatient visits to general practitioners and/or mental health (MH) providers,[7-9,12] emergency department visits,[10] or inpatient hospitalizations.[11] Only 1 compares patterns of health care utilization in outpatient, inpatient, emergency, and community MH settings among adults in Alberta, Canada.[6]

These studies have yielded mixed results, with most finding an increased amount of health care utilization by suicide cases vs controls.[6,10-12] One study found no difference in the month before death but increased utilization by cases in the 10 previous years,[9] and a single study found a decreased likelihood of accessing health care in the 6 months before suicide.[13] In addition to nonuniform assessments of health care utilization, the generalizability of these studies is limited because of differences between these health care systems and populations and those of the United States.

Without firmly establishing that there are relevant differences in patterns of health care use between those who die by suicide and similar others in the general population who do not, it is unreasonable to expect that providers ought to be able to identify suicide risk merely on the basis of the fact that patients have visited a doctor.

PATIENTS AND METHODS

The study objective was to compare the frequency and types of health care contact in the year before death between suicide decedents (cases) and age- and sex-matched controls over the same time period. Both Mayo Clinic and Olmsted Medical Center (OMC) institutional review boards approved the study.

Study Population and Setting

The Rochester Epidemiology Project (REP) database, established in 1966, contains the medical records of a population-based cohort in Olmsted County, Minnesota.[14] The 2 major health care providers in Olmsted County are the Mayo Clinic and the OMC, which through multiple branch offices and associated hospitals care for nearly every Olmsted County resident.[14] As of 2010, the REP database contained the records of 502,860 unique residents of Olmsted County who had had at least 1 contact with a health care provider in the Mayo Clinic or the OMC system.[14] The REP database provides a unique opportunity to examine a population not segregated by type of health insurance or specific provider. Researchers have access to electronic medical record and paper charts for detailed review, which provide more information on patient-provider interactions than do billing or diagnosis codes. The data contained in the REP allow the design of retrospective population-based case-control studies.

Study Design

This was a population-based case-control study. The primary research question was whether there were relevant differences in health care utilization between people who would go on to die by suicide and similar others within the population during the 12 months before the death date. In other words, if an eventual suicide decedent and a similar person presented to a health care setting in the same time period, were there any differences in the pattern of health care visits that might indicate a higher likelihood of dying by suicide?

Case Selection

Cases were selected from Olmsted County death certificates from January 1, 2000, to December 31, 2009 (10 years), which were reviewed by a member of the REP study team who was not involved with data collection. All individuals with "suicide" listed as the cause of death were considered potential cases. The resulting 132 records were then assessed by 2 authors (M.M.C. and T.J.B.) to confirm residency status in Olmsted County in the year before death, classified by last recorded address in an Olmsted County zip code. This resulted in 86 confirmed cases of suicide in Olmsted County residents between 2000 and 2009. Each subject kept his or her unique REP ID number as an identifier without any name or demographic data.

Control Selection

The final list of 86 cases was sent to a third author (J.L.G.). For each case, 3 controls were randomly selected from matched Olmsted County residents who had provided research consent for the REP database (258 controls).