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Prevalence and risk factors for suicidal ideation in a multiple sclerosis population

Rebecca Viner [a], Scott B. Patten [a,b,*], Sandra Berzins [a], Andrew G.M. Bulloch [a,b], Kirsten M. Fiest [a]

[a] Department of Community Health Sciences and Institute for Public Health, University of Calgary, Calgary, Canada
[b] Department of Psychiatry and Mathison Centre for Mental Health Research & Education, University of Calgary, Calgary, Canada

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ABSTRACT

Objective: To estimate the prevalence, incidence and determinants of suicidal ideation in the multiple sclerosis (MS) population.
Methods: A sample of 188 subjects were randomly selected from a community-based MS clinic registry and participated in as many as 13 interviews over 6 months. Thoughts of "being better off dead" or of "harming oneself" were assessed using item 9 on the Patient Health Questionnaire, Brief (PHQ-9).
Results: At baseline, the 2-week period prevalence of suicidal ideation was 8.3%. Over the course of 6 months, 22.1% of respondents reported having such thoughts at least once. Survival analysis incorporating baseline PHQ-8 scores as a covariate confirmed that being age 65 and over (HR = 4.3, 95% CI 1.7–11.3) and having lower quartile self-efficacy ratings (HR = 3.5, 95% CI 1.5–8.2) predicted suicidal ideation. Lower levels of task-oriented coping (treated as a continuous variable) also predicted suicidal ideation after adjustment for depressive symptoms ($p = 0.015$), as did self-reported bladder or bowel symptoms (HR = 2.6, 95% CI 1.1–6.0) and difficulties with speaking and swallowing (HR = 2.9, 95% CI 1.3–6.8). Associations with MS symptoms were not confounded by depressive symptoms.
Conclusion: This study identified several potentially modifiable factors that may be useful for preventing suicide in people with MS.

Introduction

Multiple sclerosis (MS) is a neurological condition characterized by demyelinating lesions in the CNS and axonal loss. Neuropsychiatric conditions are prominent in MS, with major depressive disorder having lifetime prevalence in the range of 50% [1–3] and an annual prevalence of 16% [4]. Anxiety disorders affect approximately one third of people with MS [5] and psychotic disorders are diagnosed in 2% to 3% [6]. Cognitive deficits, although highly variable in severity, affect a majority of people with MS [7]. Suicidal ideation is a concern because it is often a precursor to suicide. In the general population, it has been shown that about 90% of unplanned and 60% of planned first suicide attempts occurred within 1 year of the onset of suicidal ideation [8]. Suicide is an important cause of death in MS [9,10], where suicide rates are approximately twice that of the general population [11–13].

A commonly used screening tool, the Patient Health Questionnaire-brief, or PHQ-9, includes an item (item 9) that assesses suicidal or self-harmful thoughts. The PHQ-9 has a stem question with the wording "Over the last 2 weeks, how often have you been bothered by any of the following problems?" Which is followed by "Thoughts that you would be better off dead or of hurting yourself in some way." The item can be rated at four levels: "not at all," "several days," "more than half the days" and "nearly every day." This item has been shown to predict both subsequent suicide attempts and completed suicides [14].

A recent systematic review [15] identified only a single study examining the prevalence and predictors of suicidal ideation in people with MS [16]. This study used the PHQ-9 item described above to assess suicidal ideation and found that 29.4% of respondents endorsed it on at least "several days" whereas 7.9% endorsed it on "most days" or "nearly every day" [4]. Suicidal ideation was associated with a variety of factors in preliminary analyses, but only depression severity and bowel-related disability (incontinence) predicted suicidal ideation in a multivariable analysis, and only depression severity independently predicted persistent suicidal ideation.

A qualitative study by Gaskill and colleagues [17] identified eight key themes in 16 MS patients experiencing suicidal ideation. Of these themes, perceived loss of control was the most common one. A related theme of "regaining control" was endorsed by 7 of 16 participants and was characterized as representing a fantasized temporary escape from life and/or as a reminder of a person's reasons for living. The authors hypothesized that allowing patients to voice these thoughts might facilitate emotion-focused coping. Other themes identified in this qualitative study were frustrations related to limited functioning, family

* Corresponding author at: Department of Community Health Sciences, University of Calgary, 3rd Floor TRW Building, University of Calgary, 3280 Hospital Drive NW, Calgary, AB, Canada T2N4Z6. Tel.: +1 403 220 8752 (voice); fax: +1 403 270 7307.
E-mail address: patten@ucalgary.ca (S.B. Patten).

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tensions, loss of masculinity or femininity, hopelessness, loneliness and the physical and psychological effects of MS.

Suicide is a challenging issue and opportunities for prevention are urgently needed [18,19]. A better understanding of the determinants of suicidal ideation may help identify opportunities for prevention. Our objective was to examine these associations in a longitudinal data set to determine which, if any, of these variables predicted the emergence of suicidal ideation during prospective follow-up.

Methods

Participants

Participants were sampled from a patient registry at the University of Calgary MS clinic between June 2011 and December 2011. The registry included all patients assessed at the clinic and did not depend on having had a recent appointment. The clinic is the only specialized MS clinic in the southern part of the Canadian province of Alberta. Random sampling from the clinic registry was adopted rather than recruitment from clinic attendees because the latter could introduce bias (e.g. a consecutive series of patients would probably be a more severely ill group). To be eligible for participation, the patients were required to have a diagnosis of MS on more than one clinic visit between 2003 and 2009, not to have been discharged from the clinic (almost all such subjects would not have MS) and not to have previously indicated that they did not want to participate in research studies. All of the MS diagnoses were confirmed by neurologists specializing in MS. Of approximately 4000 registered patients, 3099 were deemed potentially eligible according to information available in the registry. A random sample of 500 patients was selected from this list and each patient was sent a recruitment letter by mail. A reminder was sent after 3 weeks if there was no response. The letter invited the patient to contact study staff to discuss possible participation.

Once a potential participant contacted the research team, an eligibility-confirmation interview was conducted by phone and informed consent was obtained. Participants were then given the option of completing the questionnaire online, on paper or via a telephone interview. Most of the participants (51.1%) completed the survey online (using a secure web page), with the others being fairly evenly distributed between mail (22.9%) and phone (26.1%). The study was approved by the University of Calgary Ethics Review Board.

Measures

A questionnaire collected basic demographic information including age, gender, marital status and living situation. Ambulation status was characterized using responses to questions about the ability to walk five blocks without assistance and about the use of walkers and/or wheelchairs some or all of the time. The questionnaire also asked about persistent symptoms using the question "Do you now have any of the following persisting MS symptoms? Persisting symptoms are those that have been present, most days, for at least 6 months." The listed symptoms included visual problems, weakness, dizziness or vertigo, tremor, fatigue, difficulty speaking or swallowing, problems with bladder or bowel function and problems with memory, calculations or reasoning.

Participants were also asked whether they had previously experienced an episode of depression or had been diagnosed with depression by a health professional. Suicidal ideation was assessed using item 9 from the PHQ-9 [10,20,21], as described above. Participants reporting "thoughts that you would be better off dead or hurting yourself in some way" on "several days" or more during the preceding 2 weeks were classified as having suicidal ideation. As an indicator of depression, we coded PHQ-8 scores > 10 as depressed. Although some have argued that certain items such as "feeling tired or having little energy" may not be indicative of depression in MS, it has been shown that these items do not substantially alter the scale's performance when used in the MS population compared to when used in the general population [22]. The PHQ-8 does not include the ninth (suicidal ideation) item in the scoring. The PHQ-8 has been shown to be a valid measure of depression [23], often correlating strongly with the PHQ-9 in physically ill populations [24,25].

The Coping Inventory for Stressful Situations Scale is a 40-item, self-report scale that separates coping into three styles [26]. Task-oriented coping entails focusing on solving problems whereas emotion-focused coping involves focusing on managing one's emotions. Avoidance coping is separated into two subscales: distraction and social diversion; both involve taking measures to avoid a problem and subsequent emotions. Participants are asked to rate how often they use each type of coping behaviour from 1 (not at all) to 5 (very much). Subscale scores were incorporated in different parts of the analysis either using quartiles, or with uncategorized scores.

The general self-efficacy (GSE) scale is a 10-item scale, each containing a statement reflecting belief in ability to handle daily challenges such as "I am confident that I could deal efficiently with unexpected events" [27]. Participants are asked to rate each statement from 1 (not at all true) to 4 (exactly true).

Several additional scales were included: the Childhood Trauma Questionnaire [28,29], the Multidimensional Scale of Perceived Social Support [30] and the Generalized Anxiety Disorder scale (GAD-7) [31]. As associations between these constructs (childhood trauma, social support and generalized anxiety) and suicidal ideation did not persist after adjustment for depression in our analyses, these scales are not discussed further.

Prospective Follow-up

Prospective follow-up occurred by mail, telephone or a web site, depending on which modality was preferred by a specific participant. Participants were contacted every 2 weeks (the duration of time covered by the PHQ-9) for follow-up data collection, which included the PHQ-9, relevant scales and other information.

Statistical Analyses

Descriptive statistics were calculated for the demographic variables. The point prevalence of suicidal ideation was calculated at the baseline assessment. Overall prevalence was estimated by determining the proportion of participants reporting any suicidal ideation at least once over the course of the 6-month follow-up. In preliminary exploration of the data, bivariate associations between the variables of interest (see Measures, above) and suicidal ideation were examined using prevalence ratios with and without adjustment for baseline depression (defined as PHQ-8 scores of 10+) using a binary regression model. These models were fit as generalized linear models of the binomial family and using a log link function. The analyses used version 12 of Stata [32].

The next part of the analysis sought to determine whether variables associated with suicidal ideation were able to predict the new onset of suicidal ideation. Initially, all respondents with suicidal ideation at baseline were removed from the data set. After confirming that the proportional hazard assumption was not violated using log-log plots and Stata's "phtest" (based on Schoenfeld residuals), Cox proportional hazard models were used to determine which variables predicted the emergence of suicidal ideation, with and without adjustment for other variables. Hazard ratios and accompanying 95% CIs were reported along with associated *p* values.

Results

After the 500 invitation letters were sent, 14 patients contacting the study team were determined not to be eligible and another 10 had apparently moved or may have had invalid addresses on file because the letters were returned by the postal service. As such, the sample contained a maximum of 476 eligible respondents. There were 73 refusals (15.3%)