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Sex differences in social risk factors for suicidal behaviour

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ABSTRACT

Objective: To explore the sex differences in social risk factors for attempted suicide using a case-control design.
Methods: Individuals who attempted suicide (n = 146) were compared to psychiatric and community controls (n = 197). Information about social factors was collected upon recruitment. Logistic regression was used to assess associations between social factors and attempted suicide.
Results: Differences were found between men and women in social risk factors associated with suicide attempts. Completion of post-secondary education (OR 0.30, 95% CI 0.14–0.64, p = 0.002) and religious practice (OR 0.43, 95% CI 0.19–0.92, p = 0.031) were significant protective factors in women. Unemployment (OR 4.31, 95% CI 1.44 – 13.72, p = 0.01) and stressful life events (OR 4.71, 95% CI 1.58 – 16.61, p = 0.009) were significantly associated with increased risk of suicide attempts in men. Subgroup analyses revealed that these factors were only significant in comparisons with non-psychiatric controls.
Conclusion: Our findings could aid clinicians in assessing suicide risk and identifying vulnerable individuals by tailoring the assessment of risk factors for men and women.

1. Introduction

Suicide is one of the leading causes of death worldwide. It claims the lives of nearly one million people each year, and has a devastating impact on families, communities, and society (WHO, 2014). Attempted suicide occurs 10–20 times more often than completed suicide, and is a significant risk factor for death by suicide in the general population (Mann, 2003; WHO, 2014).

There are a number of factors that are thought to contribute to suicide risk, including biological and social factors. Known biological risk factors include psychiatric disorders (particularly mood disorders) and chronic illness (Crump, Sundquist, Sundquist, & Winkleby, 2014). Social risk factors may include sociodemographic factors, as well as living alone and adverse experiences (Crump et al., 2014; Dube et al.,

Abbreviations: DISCOVER, Determinants of Suicide Conventional and Emergent Risk; CI, confidence interval; HiREB, Hamilton Integrated Research Ethics Board; OR, odds ratio; ref., reference category; SD, standard deviation; STROBE, Strengthening the Reporting of Observational Studies in Epidemiology; MINI, Mini-International Neuropsychiatric Interview

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2001; Schneider et al., 2014; Wang et al., 2012). Potentially protective social factors include religious involvement and social connectivity (Kleiman & Liu, 2013; Rushing, Corsentino, Hames, Sachs-Ericsson, & Steffens, 2013).

There is some evidence that social risk factors for suicidal behaviour may differ between the sexes. Studies have shown that socio-demographic factors are stronger predictors of suicide in men than in women, including unmarried status, low education level, low income, and unemployment (Crump et al., 2014; Qin, Agerbo, & Mortensen, 2003). A study of over 6 000 older adults who had died by suicide found that men were more likely than women to have experienced interpersonal problems, job or legal problems, or a recent crisis (Karch, 2011). In a study of individuals who had attempted suicide in Japan, financial and work problems were more common among men, while family problems and loneliness were more common among women (Narishige, Kawashima, Otaka, Saito, & Okubo, 2014). The evidence generally supports the notion that men are more vulnerable to socio-economic difficulties while women are more vulnerable to psychosocial difficulties (Crombie, 1990; Hankin & Abramson, 2001).

Relatively few studies have explored the topic of sex differences in risk factors for suicidal behaviour. Of those that did, some used un-adjusted statistical analyses, which may have led to biased estimates (Karch, 2011; Narishige et al., 2014). A thorough understanding of the sex differences with regard to social risk factors for suicidal behaviour will help clinicians to identify and treat individuals at risk.

The objective of this study is to explore the sex differences in social risk factors for attempted suicide using a case-control study design.

2. Methods

2.1. Data collection and study participants

The data were collected for the Study of Determinants of Suicide Conventional and Emergent Risk (DISCOVER) (Samaan et al., 2015). DISCOVER is an observational matched case-control study that aims to identify the risk factors involved in suicidal behaviour. The case-control study design was chosen because it allowed us examine the risk factors for a rare event (attempted suicide) with better statistical power than is possible in a prospective cohort study.

The study participants were recruited from hospitals and community settings between March 2011 and November 2014 in Hamilton, Ontario, a mid-sized city in Canada. The Hamilton Integrated Research Ethics Board (HiREB) approved this study (REB numbers 10–661 and 11–3479).

The study included men and women aged 18 or older who could provide written informed consent, communicate in English, and follow study procedures. Cases were defined as individuals who had been admitted to hospital following a serious suicide attempt with intent to die (as assessed using the Beck Suicide Intent Scale (Beck, Kovacs, & Weissman, 1979)) and requiring medical or psychiatric intervention. Two control groups were included. The first control group consisted of individuals with serious psychiatric disorders requiring hospitalization but no history of suicide attempts. Since most suicide attempts occur in the context of a psychiatric disorder (Harris & Barraclough, 1997), the inclusion of the psychiatric control group allowed us to capture the at-risk population and make clinically meaningful comparisons. The second control group consisted of individuals recruited from community and non-psychiatric clinical areas with no history of suicide attempts. While most of the cases and control participants in DISCOVER were matched on age and sex, additional, unmatched participants were also recruited in order to increase the size of the sample. Since we included these individuals in our analyses, we did not perform matched statistical analyses and adjusted for age and sex.

Trained research personnel approached eligible inpatients and provided detailed information about the study. Community controls were recruited by distributing advertisements in hospitals and community settings. Upon recruitment, participants signed informed consent forms and underwent a structured interview. Data were collected on sociodemographic variables, medical history, health-related behaviours, psychopathology, and suicidal behaviour. All of the study questionnaires were compiled using previously validated diagnostic and assessment tools. These included the Mini-International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998), the Beck Suicide Intent Scale (Beck et al., 1979), and the Social Support Questionnaire (Sarason, Levine, Basham, & Sarason, 1983). For participants in the case group, a detailed description of the suicide attempt was recorded. All assessments were administered in hospital or community by trained research staff.

2.2. Statistical analysis

Logistic regression models were used to assess the associations between social risk factors and attempted suicide in men and women separately, and in the entire sample. Factors for which significant univariate differences were found (chi-square test, P-values below 0.05) were included in the logistic regression models. These factors are age, education, employment status, marital status, religious practice, major stressful life events, and childhood abuse. Psychiatric and community controls were combined into one group for the primary analyses. Subgroup analyses were performed in which cases (within each sex group) were compared to psychiatric and community controls separately. R version 3.0.2 was used for all analyses (Team, 2014).

2.3. Power analysis

The generally accepted rule of thumb for logistic regression requires a minimum of 10 events per predictor variable (Peduzzi, Concato, Feinstein, & Holford, 1995). Our sample includes 146 events (individuals who attempted suicide) (81 women and 65 men). We included 7 predictor variables in our logistic regression analysis. Therefore, we believe our analyses have adequate power to detect significant differences.

The reporting of this study follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (Vandenbroucke et al., 2007).

3. Results

The study recruited a total of 343 participants, including 146 cases, 104 psychiatric controls, and 93 community controls. The recruitment process is summarized in Fig. 1. The characteristics of the sample are summarized in Table 1. The mean age of the participants was 45.45 years (SD = 15.43). Approximately half of the participants were female (52.19%). No significant differences between cases and controls were found in age or sex. The psychiatric diagnoses, according to the MINI, are summarized in Table 2.

3.1. Primary analysis

The results of the logistic regression, including odds ratios (OR), 95% confidence intervals (CI) and p-values, are presented in Table 3.

In women, being on disability (OR 6.12, 95% CI 2.36–16.96, $p < 0.001$), and being widowed, separated, or divorced (OR 3.11, 95% CI 1.06–9.59, $p = 0.042$) were significantly associated with increased risk of attempted suicide. Post-secondary education (OR 0.30, 95% CI 0.14–0.64, $p = 0.002$) and religious practice (OR 0.43, 95% CI 0.19–0.92, $p = 0.031$) were associated with decreased risk of attempted suicide.

In men, factors that were significantly associated with increased risk of attempted suicide included being unemployed (OR 4.31, 95% CI 1.44–13.72, $p = 0.01$) or on disability (OR 3.04, 95% CI 1.04–9.20,

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