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.,...
study procedures. Cases were de-
ded in settings between March 2011 and November 2014 in Hamilton,
possible in a prospective cohort study. DISCOVER is an observational matched case-control study that aims to
intervention. Two control groups were included. The
people (as assessed using the Beck Suicide Intent Scale (Beck,
admitted to hospital following a serious suicide attempt with intent to
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-
ological 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 to 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 commu-
nity 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 in-
tervention. 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 & Barralough, 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 in-
dividuals 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

Training research personnel approached eligible inpatients and
provided detailed information about the study. Community controls
were recruited by distributing advertisements in hospitals and com-
munity settings. Upon recruitment, participants signed informed con-
sent forms and underwent a structured interview. Data were collected
on sociodemographic variables, medical history, health-related beha-
vours, 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 Ques-
tionnaire (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 be-
tween 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 sepa-
rately. 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, Conrato,
Feinstein, & Holford, 1995). Our sample includes 146 events (in-
dividuals who attempted suicide) (81 women and 65 men). We in-
cluded 7 predictor variables in our logistic regression analysis. There-
fore, 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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