# Youth Suicide in Canada: Distinctions among Boys and Girls

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## Abstract

**In Canada, boys account for almost three quarters of suicides among those aged 15–24 years. However, non-fatal suicide-related behaviours also onset in youth but are more common in girls. Thus far, there has been little empirical investigation of what produces this gender paradox. This report summarizes two recently published studies in which ICES tackles the issues of the potential impacts of misclassification of suicide and of help-seeking behaviour.**


## The Issue

The desire to prevent youth suicide has touched many of us, given recent events depicted in the media. Sadly, suicide is the second leading cause of death in young people aged 15–24 years in Canada (Skinner and McFaull 2012). These deaths are untimely, devastating for loved ones and a significant loss for society as a whole. As such, policy and decision-makers want to prevent youth suicide – the question is, how? Suicide-prevention strategies and reviews of the evidence tell us the way forward involves strengthening our evidence base through high-quality research that informs and alters current policies and programs as needed. To ensure success, ongoing monitoring of implementation and outcomes is needed (Bennett et al. 2013).

What is not always recognized – and thus not well understood or acted on – is the fact that in most countries, suicide onsets in youth with higher rates in boys than girls (Pitman et al. 2012; Wasserman et al. 2005). In Canada, boys account for almost three quarters of suicides among those aged 15–24 years (with a similar proportion in older ages) (Statistics Canada 2012). However, non-fatal suicide-related behaviours (Silverman et al. 2007) also onset in youth but are more common in girls. Unlike suicide, non-fatal suicide-related behaviours peak in youth and then decline (Colman et al. 2004; Kessler et al. 2005; Nock et al. 2013; Rhodes et al. 2008). These differences between boys and girls are known as the "gender paradox" (Canetto 2008). There has been little empirical investigation of what produces the gender paradox beginning in youth. Thus, we seek to better understand these differences in order to identify opportunities to better serve these youth and reduce their risk for suicide.

This report summarizes two recently published studies in which we begin to tackle these questions (Rhodes et al. 2012, 2013). Ontario's large population and the availability of linkable, longitudinal data make this work possible. Data access was permitted through a data-sharing agreement between the Office of the Chief Coroner for Ontario and the Institute for Clinical Evaluative Sciences (ICES). Both studies were approved by the research ethics boards at St. Michael's Hospital and Sunnybrook Health Sciences Centre in Toronto, Ontario.

For ease, the terms boys and girls are used, although both studies include young adults. Also, the term youth refers to both children and youth. Sex is used rather than gender throughout, with the caveat that health services use has social and biological determinants (Canadian Institutes of Health Research Institute of Gender and Health 2012). Further, the study data contain only dichotomous measures of sex (Johnson and Repta 2012).

## Study One: Sex Differences in Youth Suicide – The Potential Impact of Misclassification

Before investigating causal explanations for the gender paradox, we sought to rule out the possibility that sex differences in suicide rates were not simply due to errors in the way suicide is identified and then classified in records. The literature tells us that suicides can be under-reported as accidental or undetermined (nature unknown) deaths due to shame, stigma and lack of evidence. (The converse, over-reporting of suicides, is less common.) Thus, if for some reason, suicides were under-reported in girls and/or over-reported in boys and these errors were corrected, sex differences in suicide rates might disappear. Accordingly, based on the literature and available information, we identified possible errors (i.e., "suspicious" deaths) and created two revised definitions of suicide. In the first definition (A), suspicious accidental or undetermined deaths were reclassified as suicides and "suspicious" suicides were reclassified as undetermined deaths. In the second, more conservative definition (B), all undetermined deaths were reclassified as suicides.

In order to apply these definitions, we collected (numerator) data on 1,294 youth aged 10–25 years who lived in Ontario and died between January 1, 2000, and December 31, 2007, by

suicide or an accidental or undetermined death. Denominators were drawn from census data. We then calculated and compared the two revised rates of suicide (definitions A and B) with the (actual) rates of suicide in boys and girls, by age and over time. (The actual definition of suicide was reliable and strict and based on clear and convincing evidence [Rhodes et al. 2012].) When we conducted these comparisons, we found that higher suicide rates in boys than girls persisted among youth aged 16–25 years and for each study year. We concluded that higher rates of suicide among boys were unlikely to be due to misclassification. It was therefore important to examine causal explanations.

## Study Two: Sex Differences in Youth Suicide – The Potential Impact of Help-Seeking Behaviour

According to one theory of the origins of the gender paradox, compared with boys, girls have a greater willingness to seek help and disclose emotional problems (Beautrais 2002). Given that almost all youth who die by suicide have a mental illness (Fleischmann et al. 2005; Renaud 2008), such a predisposition may prevent boys from getting the help they need and places them at greater risk for suicide. Further, the health care system may not always recognize their risk when they do present for care (Bethell and Rhodes 2009). Nevertheless, few studies have compared prior health service use in boys and girls who died by suicide. From the literature, there is some indication that girls and young women were more likely than boys and young men (i.e., those under age 35 years) to have used some form of mental health service in the year before their death. However, little is known about presentations to the hospital emergency department (ED). Thus, we set out to determine whether boys and girls who died by suicide differed in the nature and timing of their health services use in the year before death.

We studied 724 youth aged 10–25 years who lived in Ontario and died by suicide between April 1, 2003, and December 31, 2007. (This time frame was selected to permit a one-year look back for health service use variables. Prior to April 1, 2002, ED participation was not complete for all hospitals.) These youth were then linked to their healthcare administrative records to determine their use of an outpatient physician for any reason and specifically for mental health reasons in the previous year. We also examined presentations to the ED in the previous year for suicide-related behaviours, other mental health problems (excluding suicide-related behaviours) and reasons other than mental health. Further, we identified whether the youth had been admitted to hospital for any reason and specifically for mental health reasons. Lastly, we examined the number of days between a youth's last healthcare contact and his or her death.

We found that approximately 80% of these youth had contact with the healthcare system in the year before their death, typically physician visits (outpatient medical) and/or ED visits. Boys were more likely than girls to have had no contact (21.1% vs.14.1%). Girls were more likely than boys to have had contact and in more than one setting and closer in time to their death. Among youth seen in outpatient medical or ED settings, about two thirds of girls had a mental health contact compared with about half of boys. Together, these findings indicate that among youth who died by suicide, boys received less mental health care than girls in the year before death.

While girls were more likely than boys to be admitted to hospital, a similar proportion of boys and girls (about 85%) had an in-patient mental health stay. This finding suggests that what happens in the ED is critical in determining whether boys and girls subsequently receive needed mental health care, such as an in-patient stay. Also, among the approximately 50% of youth who presented to the ED, more girls than boys exhibited suicide-related behaviours (42% vs. 22%) and more boys than girls presented for reasons other than mental health (50.4% vs. 33%). This finding suggests that girls' presentations to the ED may offer more opportunities to have their risk detected, prompting interventions. We cannot confirm this implication, however, as we did not study all youth, only those who died by suicide. Future research will compare youth who died by suicide with their population-based peers to more carefully examine these and other questions. In particular, it will be important to examine why most youth who presented to the ED were not admitted. We need to consider discharge planning and any follow-up care received. There is evidence from randomized controlled trials that interventions beginning in the ED with follow-through to other settings can link youth at increased risk for suicide to subsequent mental health aftercare (Asarnow et al. 2011; Grupp-Phelan et al. 2012; Newton et al. 2010; Ougrin et al. 2011). At ICES, we are in the process of examining the youth mental health resources available to hospital EDs that may influence the follow-up care arranged and received.

## Summary

The fact that suicide rates are higher in males than females and that this difference emerges during youth are not always recognized. Few have studied why this difference exists and what the prevention implications are early in the life course. We found that higher suicide rates in boys than girls were unlikely to be due to misclassification, and we are now considering other explanations to help target preventive interventions. In particular, we found that most youth who die by suicide were seen in healthcare settings in the year before death. However, not all were seen for mental health reasons; this is particularly true of boys. The development and evaluation of preventive interventions in healthcare settings and screening (given effective interventions) merit further investigation. Because boys may be seen in only one setting or seen less frequently than girls, better-integrated approaches may succeed and thereby reduce the need for screening in multiple settings. HQ

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