



Cannabis use and suicidal ideation[☆]

Jan C. van Ours^{a,b,c,*}, Jenny Williams^b, David Fergusson^d, L. John Horwood^d

^a Department of Economics, CentER, Tilburg University, The Netherlands

^b Department of Economics, University of Melbourne, Australia

^c CEPR, United Kingdom

^d Christchurch School of Medicine and Health Sciences, University of Otago, Christchurch, New Zealand

ARTICLE INFO

Article history:

Received 5 March 2011

Received in revised form 13 February 2013

Accepted 14 February 2013

Available online 28 February 2013

JEL classification:

C31

I10

I18

Keywords:

Cannabis use

Suicidal ideation

Mental health

ABSTRACT

Globally, suicide has emerged as the second leading cause of death among youth aged 10–24 years old. In order to better understand the causes of this phenomenon, we investigate the relationship between suicidal ideation and cannabis use. Our empirical analysis is based on a 30-year longitudinal study of a birth cohort. We find that intensive cannabis use – at least several times per week – leads to a higher transition rate into suicidal ideation for males. We find no evidence that suicidal ideation leads to cannabis use for either males or females.

© 2013 Elsevier B.V. All rights reserved.

1. Introduction

Adolescence is typically a time of good health. The major threats to health and wellbeing during this period come from injuries, mental health problems, and non-communicable disease risk factors. Amongst 10–24 year olds, suicide is now the second leading cause of death, eclipsed only by motor vehicle accidents (Patton et al., 2009). This has not always been the case. In the US for example, the rate of suicide for adolescents has tripled since 1960, and doubled since 1970. In countries such as Canada, Australia, New Zealand, as well as the US, the suicide rate for 15–24 year olds has now reached 10 deaths per 100,000 in the population or greater (WHO, 2009).¹ In addition to successful suicides, suicidal behaviors include attempted suicide and suicidal ideation (or

suicidal thoughts). The incidence of these less visible behaviors is equally shocking. In the US for example, 16% of high school students reported having seriously considered attempting suicide in the past year, 8% reported actually attempting suicide at least once during the same period, while 2% made a suicide attempt that required medical attention (CDC, 2012).

In this paper we seek to determine whether cannabis use plays a causal role in explaining suicidal behavior of youth using longitudinal data on a birth cohort. Over the last 30 years, the proportion of youth who have used cannabis has risen steeply in most developed countries. At the same time, the age at which cannabis is first used has fallen, with uptake now typically occurring in the mid to late teens (Hall, 2006). While most users of cannabis do not suffer any significant ill effects from its consumption, there is mounting evidence that early onset of cannabis use leads to an increased risk of several adverse outcomes including cannabis dependence, early school leaving, and perhaps psychosis. The findings with respect to suicidal behaviors (and other measures of mental health and wellbeing) are less clear-cut.

A substantial literature in epidemiology and a smaller one in economics identifies cannabis use as an important risk factor for suicidal behaviors (Fergusson et al., 2000b,a; Beautrais et al., 1999; Reinherz et al., 1995; Tekin and Markowitz, 2008). These findings raise important questions about the extent to which there is a causal relationship between cannabis use and reduced mental

[☆] The authors wish to thank Gabriella Conti, Stephen Jenkins, Stephen Pudney and participants of the Economics of Substance Use and Abuse sessions at ASHE 2010 meetings and two anonymous referees for useful comments on previous versions of the paper.

* Corresponding author at: Department of Economics, CentER, Tilburg University, The Netherlands. Tel.: +31 13 4662880.

E-mail addresses: vanours@uvt.nl (J.C. van Ours),

jenny.williams@unimelb.edu.au (J. Williams), dm.fergusson@otago.ac.nz

(D. Fergusson), john.horwood@otago.ac.nz (L.J. Horwood).

¹ See http://www.who.int/mental_health/prevention/suicide/country_reports/en/.

wellbeing. However, studies which seek to establish causality are few and their findings are mixed with some studies reporting a positive effect of substance use on poor mental health outcomes and others reporting no effect (Fergusson and Horwood, 1997; Fergusson et al., 2002; Chatterji et al., 2004; Wilcox and Anthony, 2004; Van Ours and Williams, 2011, 2012).

Understanding the underlying causes of suicidal behaviors is an important, yet understudied area in economics (Marcotte, 2003; Chen et al., 2012). Suicidal behaviors impose significant economic costs on society. For example, the cost of completed suicides by 10–24 year olds in the US in 2005 was estimated to be \$6 billion in medical expenses and lost work alone.² Non-fatal suicidal behaviors have been shown to reduce the likelihood of young adult's participation in education and employment (Tekin and Markowitz, 2008). Given the enduring impact of education on health, the deficits induced by non-fatal suicidal behaviors in youth are likely to have a long lived and cumulative impact on lifetime health and wellbeing (Cutler and Lleras-Muney, 2010). As noted by Heckman (2012), early-life prevention has the dual benefit of extending the quality and length of life and of avoiding costly treatment. It is in this context that we seek to make a contribution by providing new evidence on the causal role of cannabis use in explaining the non-fatal suicidal behavior of youth.

Establishing causality in a relationship between outcomes that result from individual decision-making is an intrinsically difficult task, generally requiring longitudinal information on the outcomes of interest. Even with longitudinal data, the episodic and cyclical nature of suicidal behaviors make identifying the causal effect of cannabis use especially challenging. The innovation of our approach is that it considers the relationship between the onset of suicidal ideation and the uptake of regular cannabis use. The focus on first episodes of suicidal ideation and regular cannabis use affords some confidence that we are able to empirically discern the direction of causal pathways linking substance use and suicidal behavior, and quantify the strength of these effects.

In order to identify the causal effect of cannabis use on suicidal behavior, we address both the potential for reverse causality and common unobserved confounders in this relationship. Ours is the first study to do so. The framework we use is based on a bivariate mixed proportional hazard model in which the transition into cannabis use and into suicidal ideation form a fully simultaneous system. In this system cannabis use is permitted to impact on the onset of suicidal ideation, suicidal ideation is permitted to impact on the uptake of cannabis use, and the unobserved heterogeneity terms entering each transition rate are potentially correlated. A significant benefit of this framework is that, in addition to providing a reliable estimate of the causal impact of cannabis use on suicidal behaviors, it permits us to establish whether suicidal behavior leads to cannabis use. This is a further contribution of this research.

Our empirical analysis is based on a 30-year longitudinal study of a cohort of children born in 1977 in Christchurch, New Zealand. The Christchurch Health and Development Study (CHDS) is uniquely suited to studying the causal relationship between non-fatal suicidal behaviors and cannabis use, containing annual information on suicidal ideation and annual information on the uptake and intensity of cannabis use for the cohort from the age of 15.³ Our results reveal that after controlling for personal and family characteristics, there remains a significant correlation in the unobserved heterogeneity terms that enter the hazards for

suicidal ideation and cannabis use for both males and females. This renders cannabis use endogenous in the model for the onset of suicidal ideation and suicidal ideation endogenous in the model for the uptake of cannabis. Accounting for this endogeneity, regular cannabis use is estimated to increase the hazard of transitioning into suicidal thoughts for males but not females. Further investigation reveals that the effect for males is driven by those using at least several times per week. Finally, we find no significant effect of suicidal ideation on the uptake of regular cannabis, for either males or females, once the endogeneity of suicidal ideation is accounted for.

The rest of this paper is laid out as follows. Section 2 provides background information on suicidal behavior, the economics of suicide, and the literature that seeks to identify a causal link from substance use to suicidal behavior and other measures of mental wellbeing. Section 3 introduces the Christchurch Health and Development Study and describes the relevant features of these data. Section 4 lays out our empirical strategy for obtaining causal estimates of the effect of cannabis use on suicidal ideation. Section 5 presents our results and Section 6 concludes with a discussion of our findings.

2. Background

2.1. Successful suicides, suicide attempts and suicidal thoughts

The World Health Organization estimates that in the year 2000, around 1 million people died from suicide. On average, there are three male suicides worldwide for every female suicide. Only a minority of people who are suicidal actually take their own lives. There is an estimated 10–20 people who attempt suicide for each person who dies from suicide (Krug et al., 2002). Suicide attempts are more common among women than men and amongst younger people than older people. Women attempt suicide over their lifetime about two to three times as often as men. It is estimated that for those under the age of 25, there are around 100–200 non-fatal suicide attempts for every fatal one, whereas for those over 65, there are between 2 and 3. Although the extent of suicidal ideation is less clear, the data available indicate that suicidal thoughts are more common among females than males, and among younger people than older people. For example, it is estimated that between 3.5% and 52.1% of adolescents engage in suicidal thoughts compared to between 2.3% and 17% of older adults (WHO, 2002). Amongst high school students in the US, the prevalence of suicidal ideation is estimated to be 19.3% for females and 12.5% for males.

2.2. Risk factors for suicide and suicidal behaviors

Suicidal behavior has a large number of underlying causes. Often, there will be an event that precipitates suicidal behavior. For adolescents, the most common precipitants are stressful life events such as romantic difficulties, death or loss of a parent or close friend, an argument with a parent, financial or employment problems, or other events that involve humiliation, loss, defeat or threat (Beautrais et al., 2005; Bridge et al., 2006). While such events are common experiences in adolescence, only a minority of people are driven to suicide. To act as precipitating factors, these events must happen to someone who is predisposed or otherwise especially vulnerable to self-harm.

Over the last few decades, substantial progress has been made in identifying a large number of predisposing risk factors for suicidal behavior. The strongest risk factor for suicide is the presence of one or more psychiatric disorders (Beautrais et al., 2005). Mood disorders, especially depression, has consistently been shown to

² There are about 4400 lives lost each year to suicide amongst 10–24 year olds in the US.

³ The CHDS also includes annual information on suicide attempts. However, the number of attempts is too few to analyze.

Download English Version:

<https://daneshyari.com/en/article/10476479>

Download Persian Version:

<https://daneshyari.com/article/10476479>

[Daneshyari.com](https://daneshyari.com)