Accident Analysis and Prevention 121 (2018) 14–19

Contents lists available at ScienceDirect

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap

Driving under the influence of prescription opioids: Self-reported prevalence and association with collision risk in a large Canadian jurisdiction☆

Christine M. Wickens[a,b,*], Robert E. Mann[a,b], Bruna Brands[a,c,d], Anca R. Ialomiteanu[a], Benedikt Fischer[a], Tara Marie Watson[a], Justin Matheson[a,c], Gina Stoduto[a], Jürgen Rehm[a,b,e,f,g]

[a] Centre for Addiction and Mental Health, Toronto, Ontario, Canada
[b] Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada
[c] Department of Pharmacology and Toxicology, University of Toronto, Toronto, Ontario, Canada
[d] Office of Drug Research and Surveillance, Controlled Substances Directorate, Healthy Environment and Consumer Safety Branch, Health Canada, Ottawa, Ontario, Canada
[e] Department of Psychiatry, Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada
[f] Institute of Medical Science, University of Toronto, Toronto, Ontario Canada
[g] Clinical Psychology and Psychotherapy, Technische Universität, Dresden, Germany

ARTICLE INFO

Keywords:
Prescription opioids
Impaired driving
Motor vehicle collision*
Crash risk
Canada

ABSTRACT

Background: Motor vehicle collisions are an important contributor to prescription opioid use-related morbidity and mortality. The purpose of the current study was to estimate the prevalence of driving under the influence of prescription opioids (DUIPO) in Ontario, Canada, and to measure the association between this behaviour and the risk of a motor vehicle collision.

Methods: Data were based on telephone interviews with 7857 respondents who reported having driven in the past year. Data were derived from the 2011–2016 cycles of the CAMH *Monitor*, an ongoing cross-sectional representative survey of adults aged 18 years and older. A binary logistic regression analysis of collision involvement in the previous 12 months was conducted and included demographic characteristics (sex, age, marital status, education, income, region), driving exposure, poor mental health, non-medical use of prescription opioids, and driving after use of alcohol.

Results: The prevalence of past-year DUIPO was 3.1%. Controlling for demographic characteristics, driving exposure, and other risk factors, self-reported DUIPO significantly increased the odds of a collision (Adj*OR* = 1.97; *95% CI* 1.08, 3.60; $p = 0.026$).

Conclusion: Based on these findings, DUIPO is a notable road safety issue. Research focused on better understanding the impact of prescription opioids on driver behaviour, reducing the prevalence of DUIPO, and improving drug-impaired driving policy and interventions should be prioritized in public health strategies.

1. Introduction

According to a recent United Nations report, Canada is the world's second largest per capita consumer of prescription opioids – a list that includes morphine, oxycodone, and fentanyl, which are most often used for their analgesic properties – after the United States (International Narcotics Control Board, 2016). Despite an overall reduction in dispensing of potent prescription opioids from 2010 to 2013, there was a continued increase in overall prescription opioid-related mortality in various Canadian jurisdictions (Fischer et al., 2014, 2015; Murphy et al., 2015). Motor vehicle collisions are an important contributor to morbidity and mortality outcomes of prescription opioid use. Callaghan et al. (2013), in a study relating hospital admission data to death records in California, found that individuals diagnosed with an opioid use disorder had a risk of dying in a motor vehicle collision 2.8 times higher than the general population. However, studies of driving ability under the influence of opioids have produced mixed results. Some studies have found no significant differences in driving ability between

☆ A previous version of this manuscript was presented at the 2017 conference of the Canadian Association of Road Safety Professionals in Toronto, Ontario, Canada.

* Corresponding author at: Institute for Mental Health Policy Research, Centre for Addiction and Mental Health, 33 Russell Street, Toronto, Ontario, M5S 2S1, Canada.
E-mail address: christine.wickens@camh.ca (C.M. Wickens).

https://doi.org/10.1016/j.aap.2018.08.026
Received 6 January 2018; Received in revised form 17 August 2018; Accepted 26 August 2018
0001-4575/ © 2018 Elsevier Ltd. All rights reserved.

individuals taking opioids versus those not taking opioids (Byas-Smith et al., 2005; Moskowitz and Robinson, 1985); however, other studies have identified increases in unsafe driving actions (Schindler et al., 2004; Dubois et al., 2010) and collision risk (Engeland et al., 2007; Gomes et al., 2013; Wickens et al., 2017) associated with opioid use. A positive correlation between the concentrations of codeine and morphine in blood and vehicle weaving has also been reported (Amato et al., 2013). Inconsistent research findings could likely be attributed to several factors, such as the type or formulation of opioids used, dosage, drug tolerance, and health-related conditions (e.g., chronic pain management; Lenné et al., 2000; Nilsen et al., 2011; Schindler et al., 2004; Strand et al., 2013; Verster et al., 2006).

Nevertheless, despite mixed findings, one recent meta-analysis of epidemiological studies assessing drug use and collision risk observed that use of opiates was associated with nearly a five-fold increase in the odds of a property-damage-only collision and nearly a two-fold increase in the odds of a collision involving an injury or a fatality (Elvik, 2013). Another recent meta-analysis focusing on epidemiological studies of prescription opioid use and subsequent motor vehicle collisions involving fatalities or injuries requiring medical attention reported similar findings; opioid use more than doubled the odds of a collision and significantly increased the odds of collision culpability (Chihuri and Li, 2017).

Prevalence of driving under the influence of prescription opioids (DUIPO) has been estimated primarily through toxicological testing of drivers injured or killed in a collision. Globally, these studies have provided estimates of opioid-impaired driving ranging from 4% to 20% (Asbridge et al., 2015; Keller et al., 2009; Papadodima et al., 2008). In Ontario, Canada, 15% of drug-positive collision fatalities in 2015 involved the use of opioids (Woodall et al., 2015). Roadside surveys are able to detect the incidence of opioid-impaired driving that does not result in a collision. Using urine, blood, or oral fluid sampling, roadside surveys have found opioid-positive results for up to 1.6% of drivers (Behrensdorff and Steentoft, 2003; Beirness and Beasley, 2010; Dussault et al., 2000; Gjerde et al., 2008, 2013; Gómez-Talegón et al., 2012; Krüger et al., 1995). Roadside surveys from the United States and Canada have generated some of the highest of these estimates at 0.9% or more (Beirness and Beasley, 2010; Dussault et al., 2000; Lacey et al., 2009). Self-report surveys can also be used to measure prevalence of opioid-impaired driving not associated with a collision outcome and can allow for a focus on use of prescription or non-prescription opioids (e.g., heroin). Although most surveys measure prevalence among selected populations, such as identifying very high rates of drug-impaired driving among people who use illicit drugs (Albery et al., 2000), it is also important to examine prevalence of opioid-impaired driving across the broader population.

Acknowledging that prescription opioid dispensing differs across Canadian jurisdictions (Fischer et al., 2014), the purpose of the current study was to estimate the prevalence of DUIPO in the province of Ontario and to measure the hypothesized association between this behaviour and the risk of a motor vehicle collision.

2. Method

2.1. Sample

Data were based on telephone interviews with 7857 respondents who reported having driven in the past year and who responded to questions regarding weekly mileage and past-year collision involvement. Data were derived from the 2011–2016 cycles of the Centre for Addiction and Mental Health (CAMH) *Monitor*, an ongoing cross-sectional representative survey of adults aged 18 years and older in Ontario. Although it is possible that a single individual could be contacted to participate in the survey in more than one sampling cycle, the probability is very low. Approximately 3000 people, selected at random, are surveyed in a calendar year in a province with a population over 14 million (almost 40% of the Canadian population; Statistics Canada, 2017), making duplicate contacts unlikely. The survey cycle includes multiple panels consisting of core questions which are found in all panels as well as panel-specific items, such as the item related to DUIPO. This approach allows for maximum survey content without increasing respondent burden. The number of respondents assigned to each panel varies from one year to the next based on changing operational needs.

The CAMH *Monitor* employs random-digit-dialing (RDD) methods via Computer Assisted Telephone Interviewing. The use of list-assisted RDD (instead of landline numbers only) allows for the inclusion of cellular telephones, newly listed and unlisted numbers. Each annual cycle consisted of four independent quarterly samples with approximately 750 completions each. The annual response rate varied from 41% to 51%. Weights were applied to the data to adjust for varying selection probabilities, regional representation, and to restore the age by sex distribution based on the most recently available census figures. The weighted sample is considered representative of the non-institutionalized Ontario adult population (see Ialomiteanu et al., 2016 for sampling design details). The CAMH research ethics committee approves the survey annually.

2.2. Variables

The key outcome variable was past-year involvement in a motor vehicle collision. Specifically, participants were asked: “During the past 12 months, how often, if at all, were you involved in an accident or collision involving any kind of damage or injury to you or another person or vehicle while you were driving?” Responses were recoded to create a binary collision variable (no, yes).

The CAMH *Monitor* asks respondents about their use of pain relievers. Respondents were specifically instructed not to consider over-the-counter pain relievers that can be bought without a doctor’s prescription. Rather, in this survey, pain relievers referred to those obtained by a prescription from a doctor or dentist such as Percocet, Percodan, Demerol, OxyContin, Tylenol #3 or other products. Initially, participants were asked: “In the past 12 months how many times, if at all, have you used any such pain relievers with a prescription or because a doctor told you to take them?” Non-medical prescription opioid use, included here as a covariate, was subsequently measured with the item: “In the past 12 months how many times, if at all, have you used any such pain relievers without a prescription or without a doctor telling you to take them?” Responses were dichotomized to identify respondents who reported non-medical use of prescription opioids versus those who did not. The primary predictor variable in the current analysis was DUIPO in the past year. Specifically, participants were asked: “During the past 12 months, have you driven a motor vehicle after taking any prescription pain relievers in the previous hour?” (no, yes).

A number of other covariates were controlled in the analysis. Demographic variables included sex (female, male), age (18–34 years, 35–54 years, 55+ years), marital status (married or common law, previously married, never married), education (< high school, completed high school, some post-secondary, university degree), income (< $30,000, $30,000–49,999, $50,000–79,999, $80,000+, not stated), and region of residence (comprised of six regions in Ontario: Toronto, Central East, Central West, West, East, North). Weekly driving distance, included as a control for differences in exposure, was treated as a continuous variable. Driving after drinking was measured with the question: “During the past 12 months, have you driven a motor vehicle after having two or more drinks in the previous hour?” (no, yes). Poor mental health was assessed by the question: “In general, would you say your overall mental health is excellent, very good, good, fair, or poor?” Responses were converted to binary coding, indicating reported poor or fair mental health versus good to excellent mental health. Year of interview was also included in analyses.

Download English Version:

https://daneshyari.com/en/article/8965224

Download Persian Version:

https://daneshyari.com/article/8965224

Daneshyari.com