



Are non-fatal opioid overdoses misclassified suicide attempts? Comparing the associated correlates

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ABSTRACT

This paper aimed to determine whether non-fatal opioid overdose and suicide attempts are distinct behaviours by examining the histories of 1500 opioid-dependent individuals. This paper utilised data collected as part of a large retrospective case-control study. Unintentional non-fatal opioid overdoses were more common than suicide attempts (58% vs. 32%). Overall, the correlates associated with a history of attempted suicide only and non-fatal opioid overdose only were different. Drug-related risk behaviours (including high impulsivity, injection of opioids, sedative dependence) were associated with non-fatal opioid overdose; and a history of mental disorders (depression, anxiety disorder, and screening positive for borderline personality disorder (BPD+)) were associated with suicide attempts. Additionally, those who reported a history of both behaviours had a more severe clinical profile including excessive drug use, psychological disorders and childhood trauma. The study concluded that non-fatal opioid overdose and attempted suicide are distinct clinically significant problems that require different approaches for prevention. Additionally, if both behaviours are reported a thorough assessment of underlying comorbid problems should be initiated by treatment services.

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1. Introduction

In high income countries, mortality rates among opioid users have been found to be 13 times higher than among the general population (Hulse, English, Milne, & Holman, 1999). Both suicide and opioid overdose contribute to the substantial rates of premature death reported among opioid users (Darke, Degenhardt, & Mattick, 2006). Fatal overdoses and suicides, however, represent only a small proportion of the total number of overdose and suicide events (both fatal and non-fatal) (Darke et al., 2006). Not only has a history of an overdose or a suicide attempt been shown to best predict subsequent mortality, but both behaviours have been associated with substantial morbidity in their own right (Darke et al., 2006; Darke & Ross, 2002). Considering the substantial morbidity and mortality which exists a thorough comparison of the associated correlates is important.

Studies typically suggest around a third of opioid-dependent individuals report a lifetime suicide attempt (Darke & Ross, 2001; Darke, Ross, Lynskey, & Teesson, 2004; Murphy, Rounsaville, Eyre, & Kleber, 1983; Rossow & Lauritzen, 1999). Although limited, research suggests that the risk factors associated with attempted suicide among opioid-dependent individuals include gender (female), psychiatric morbidity, social isolation, family dysfunction, impulsivity and

drug dependence (other than opioids) (Darke & Ross, 2002; Dougherty, Mathias, Marsh, Moeller, & Swann, 2004; Maloney, Degenhardt, Darke, Mattick, & Nelson, 2007).

Research has found that 46% to 70% of all opioid users have experienced at least one non-fatal opioid overdose over their lifetime (Darke & Ross, 2001; Darke, Ross, & Hall, 1996; McGregor, Darke, Ali, & Christie, 1998; Rossow & Lauritzen, 1999; Vingoe, Welch, Farrell, & Strang, 1999; Warner-Smith, Darke, & Day, 2002). Although the majority of fatal opioid overdose cases are males, males and females have similar risk for non-fatal opioid overdose (Bennett & Higgins, 1999; Darke et al., 2006; Darke & Hall, 2003; McGregor et al., 1998).

Contrary to popular belief, non-fatal opioid overdoses have been found to be more common among older, more experienced users (Darke et al., 2006; Darke & Hall, 2003). Polydrug use has also been linked to opioid overdose, with central nervous system depressants, such as alcohol and benzodiazepines, commonly associated with non-fatal opioid overdose cases (Darke et al., 2006; Darke & Hall, 2003; Darke, Williamson, Ross, & Teesson, 2005; Warner-Smith, Darke, Lynskey, & Hall, 2001). Other risk factors found to be associated with non-fatal opioid overdose cases are injecting as the primary route of administration, and high risk periods, such as post release from prison (Darke et al., 2006; Darke & Hall, 2003; Farrell & Marsden, 2008; Seaman, Brettle, & Gore, 1998).

There is disagreement concerning the relationship between unintentional non-fatal opioid overdoses and suicide attempts. This disagreement relates firstly, to the extent to which the behaviours can

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be differentiated based on the observed risk factors, and secondly, the issue of whether research can assess the degree of suicidal intent expressed by opioid-dependent individuals (Cantor, McTaggart, & De Leo, 2001). Research has suggested that around 25% to 30% of opioid users report a history of both a suicide attempt and a non-fatal opioid overdose (Darke & Ross, 2001; Rossow & Lauritzen, 1999; Vingoe et al., 1999). Some studies have found an association between non-fatal opioid overdose and suicide attempts, and have concluded that they can be seen as risk markers for each other (Rossow & Lauritzen, 1999; Vingoe et al., 1999). Additionally, research does suggest that non-fatal overdoses and suicide attempts are predicted by different correlates (Ravndal & Vaglum, 1999). Frequent use of opioids and other opioid use patterns have been found to predict lifetime non-fatal overdose, whereas a diagnosis of borderline personality disorder (BPD) or depression, for example, have been found to predict lifetime suicide attempts (Darke & Hall, 2003; Ravndal & Vaglum, 1999).

A limited number of findings are also consistent with the argument that non-fatal opioid overdoses are *not* misclassified suicide attempts. Firstly, it has been noted that a high degree of seriousness is generally reported when the suicide attempts of opioid users are examined (Darke & Ross, 2001). Secondly, the finding that opioids are rarely chosen as a method for attempting suicide clearly distinguishes this behaviour from an accidental opioid overdose (Darke & Ross, 2001; Johnsson & Fridell, 1997; Vingoe et al., 1999). Thirdly, a number of studies have found that suicidal intent is not a contributing factor among opioid overdoses (Darke & Ross, 2001; Rossow & Lauritzen, 1999; Vingoe et al., 1999). This view has been disputed, however (Neale, 2000).

Despite the noted importance of assessing non-fatal opioid overdose, few studies have been conducted to carefully assess the issue of whether they are misclassified suicide attempts (Darke et al., 2006). Most studies have examined a few correlates for either suicide attempts or non-fatal opioid overdose, but not a comprehensive list. To our knowledge, only one study (Rossow & Lauritzen, 1999) has compared attempted suicide and non-fatal opioid overdose using mutually exclusive categories. Considering previous studies have demonstrated a substantial overlap exists between the two behaviours (Darke & Ross, 2001; Rossow & Lauritzen, 1999; Vingoe et al., 1999), it is important to also assess the characteristics associated with those who report a history of both behaviours.

This paper goes beyond previous work and compares multiple known correlates for non-fatal opioid overdoses and suicide attempts, including indicators of drug use, psychological disorder and childhood abuse. A comprehensive comparison is essential considering the morbidity, and future risk of mortality associated with both behaviours. This paper aims to determine if it is possible to differentiate correlates for non-fatal opioid overdose and suicide attempts. This aim was addressed by comparing those who reported an overdose only, those who reported a suicide attempt only, and those who reported a history of both behaviours, with those reporting no history of either behaviour.

The specific aims of this paper are:

1. to assess the reported prevalence of lifetime suicide attempts and non-fatal opioid overdose among a sample of opioid-dependent individuals;
2. to examine the extent to which suicide attempts and opioid overdoses are related among this sample; and
3. to compare the correlates associated with attempted suicide and non-fatal opioid overdose.

2. Method

2.1. Procedure

This paper utilised data collected as part of an ongoing, large retrospective case-control study examining genetic and environmen-

tal factors (e.g. childhood trauma) contributing to opioid dependence liability. This paper only used data collected from the participants defined as “cases”. A full description of the methods used to obtain control participants has been published in a previous paper (Maloney et al., 2007). Cases were defined as such if they had participated in pharmacotherapy maintenance treatment for opioid dependence at some point in their lives. Additionally, they were required to have a good understanding of English and be aged over 18. Cases were recruited from both public and private opioid maintenance treatment clinics in New South Wales, Australia. Data reported here were collected from December 2004 to April 2008. The major demographic characteristics were identified as similar to the NSW sample of heroin users enrolled in the Australian Treatment Outcome Study (ATOS) (Ross et al., 2003). See page 9 for a full description of the demographic and mental health characteristics of the cases.

All interviews were conducted by trained interviewers with graduate and postgraduate qualifications in psychology or social sciences; and who have received comprehensive training in the administration of the structured diagnostic interview used in the study. All participants were guaranteed any information given to the researchers would be kept strictly confidential as part of the consent protocol that was approved by the institutional review boards of University of New South Wales, Washington University, Queensland Institute of Medical Research and, for cases, the Ethics Committee responsible for oversight of research at their opioid maintenance treatment clinic. Participants were reimbursed \$50 for out-of-pocket expenses.

2.2. Structured interview

Researchers administered a structured interview to all participants containing sixteen sections. DSM-IV lifetime diagnoses of substance use disorders (dependence of cannabis, sedatives, opioids, stimulants, cocaine, nicotine and alcohol), DSM-IV diagnosis of PTSD, major depressive episode, anti-social personality disorder (ASPD), and panic disorder were obtained using sections adopted and modified from the Collaborative Study on the Genetics of Alcoholism (COGA) Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA-II) (Bucholz et al., 1994; Hesselbrock, Easton, Bucholz, Schuckit, & Hesselbrock, 1999).

The questions assessing non-fatal opioid overdose were included in the section assessing opioid dependence as described above. Consistent with previous research (Warner-Smith et al., 2001), a non-fatal opioid overdose was defined as an event where loss of consciousness and respiratory depression occurs that does not result in a fatal outcome. Similarly, consistent with the literature, attempted suicide was defined as “deliberate self-harm with the intent of causing death,” which does not result in a fatal outcome (Darke et al., 2004). This section on attempted suicide was adapted from the COGA SSAGA-II (Bucholz et al., 1994; Hesselbrock et al., 1999) with additional questions included to assess suicidal intent and seriousness. Both non-fatal opioid overdoses and suicide attempts were assessed as lifetime events.

The BPD screener was adapted from the International Personality Disorder Examination (IPDE) for use in the Australian National Survey of Mental Health and Wellbeing using the ICD-10 criteria (Jackson & Burgess, 2000; Loranger et al., 1994; World Health Organization, 1993). Sections adapted from the Christchurch Trauma Assessment, used in the Christchurch Health and Development Study (Fergusson, Horwood, & Woodward, 2000) elicited information related to childhood physical and sexual abuse. Two separate binary variables were used and each was endorsed if the participant reported any childhood physical abuse, or any childhood sexual abuse.

Participants also completed the Barratt Impulsiveness Scale version 11 (BIS-11). The BIS is the most frequently used self-report measure of impulsivity (Dougherty et al., 2004), and has been found

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