



Sex differences amongst dependent heroin users: Histories, clinical characteristics and predictors of other substance dependence

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ABSTRACT

Introduction and aims: To examine differences in the characteristics and histories of male and female dependent heroin users, and in the clinical characteristics associated with multiple substance dependence diagnoses.

Design and methods: 1513 heroin dependent participants underwent an interview covering substance use and dependence, psychiatric history, child maltreatment, family background, adult violence and criminal history. Family background, demographic and clinical characteristics were analysed by sex. Ordinal regression was used to test for a relationship between number of substance dependence diagnoses and other clinical variables.

Results: Women were more likely to experience most forms of child maltreatment, to first use heroin with a boyfriend or partner, to experience ongoing adult violence at the hands of a partner, and to have a poorer psychiatric history than men. Males had more prevalent lifetime substance dependence diagnoses and criminal histories and were more likely to meet the criteria for ASPD. Predictors of multiple substance dependence diagnoses for both sexes were mental health variables, antisocial behaviour, childhood sexual abuse, victim of adult violence, younger age at first cannabis use and overdose. As the number of dependence diagnoses increased, clinical and behavioural problems increased. Childhood emotional neglect was related to increasing dependence diagnoses for females but not males, whereas PTSD was a significant predictor for males but not females.

Discussion and conclusions: Mental health problems, other substance dependence, childhood and adult trauma were common in this sample, with sex differences indicating different treatment needs and possible different pathways to heroin dependence for men and women.

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1. Introduction

Studies of heroin dependent persons have described a chronic disorder strongly associated with polydrug use, poor mental and physical health, an increased risk for mortality, and poor legal, social and economic outcomes (Bargarli et al., 2006; Burns et al., 2009; Craddock, Rounds-Bryant, Flynn, & Hubbard, 1997; Degenhardt et al., 2009; Fischer, Firestone Cruz, & Rehm, 2006; Fischer, Manzoni, & Rehm, 2006; Gossop et al., 1998; Hubbard, Craddock, & Anderson, 2003). Although it is a low prevalence disorder, the severity of problems associated with it makes it an important public health issue to understand. Further, within the heroin dependent population,

important clinical differences may manifest for different subpopulations including males and females.

There is some evidence of different characteristics for male and female dependent heroin users. Those studies that have reported sex differences found that females were younger (Chen, Shu, Liang, Hung, & Lin, 1998; Chiang et al., 2007; Williamson, Darke, Ross, & Teesson, 2007) and had more suicide attempts and fewer completed suicides (Darke & Ross, 2002; Darke, Ross, Lynskey, & Teesson, 2004; Darke, Williamson, Ross, & Teesson, 2005); different injecting behaviours (Hoda, Kerr, Li, Montaner, & Wood, 2008); less education and employment (Chen et al., 1998; Chiang et al., 2007); a younger onset of heroin use (Chen et al., 1998); more dysfunctional families and exposure to more unfavourable social factors (Chatham, Hiller, Rowan-Szal, Joe, & Simpson, 1999; Chiang et al., 2007); greater health service utilization (Darke, Ross, Teesson, & Lynskey, 2003; Fletcher, Broome, Delany, Shields, & Flynn, 2003); higher standardised mortality ratios (Rehm et al., 2005); more psychological problems (Chatham et al., 1999; Mills, Teesson, Darke, Ross, & Lynskey, 2004); and were more likely to sustain abstinence after treatment (Darke,

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Ross, Mills, et al., 2007) than men. The evidence regarding sex differences in polysubstance use and dependence amongst heroin users is mixed, with one study finding no differences in the number of current or lifetime diagnoses (Darke & Ross, 1997), another found higher levels of polydrug use amongst male heroin users (Darke & Hall, 1995) and another finding no sex differences in class memberships based on polysubstance use (Monga et al., 2007).

Although general population studies consistently find that males have higher rates of substance use and dependence than females (Kessler, Chiu, Demler, Merikangas, & Walters, 2005; Kessler et al., 1994; Stinson et al., 2005; Teesson, Hall, Lynskey, & Degenhardt, 2000; Warner, Kessler, Hughes, Anthony, & Nelson, 1995), these sex differences may be less marked amongst a sample distinguished by high levels of antisocial or externalising problems. There is evidence of a heritable liability for antisocial behaviour, and the polygenic multiple threshold model suggests that females may need a greater liability to express antisocial behaviour (Rhee, Waldman, Rhee, & Waldman, 2002). Therefore the women in the current sample may carry a higher genetic and/or environmental liability for antisocial behaviour (ASB) than the males. Greater environmental liability for females has already been noted in the form of more dysfunctional families and exposure to more unfavourable social factors (Chatham et al., 1999; Chiang et al., 2007). Alternatively, there may be sex differences in gene–environment interactions or gene–environment correlation (Rutter et al., 2006).

Consistent with the existence of a general heritable liability to ASB, having one externalising disorder increases the risk of having other externalising disorders (Krueger, Markon, Patrick, & Iacono, 2005). Use of several drug classes amongst dependent heroin users is common, and is associated with poorer mental health (Darke & Ross, 1997), increased fatal and non-fatal overdose (Darke, Ross, & Hall, 1996; Zador, Sunjic, & Darke, 1996) risky injecting behaviour (Klee, Faugier, Hayes, Boulton, & Morris, 1990) and poorer treatment outcomes (Marsden et al., 2009). Amongst drug users in treatment, polydrug use is associated with adverse family histories, self-harm, aggression, psychoticism and impulsivity (Martinotti et al., 2009). ‘Polydrug use’ is used in the research literature to describe the use of two or more drugs within a particular timeframe (concurrent, sequential, 30 day, 12-month or lifetime). The term ‘polysubstance dependence’ is defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) as a substance use disorder where an individual uses at least three different classes of substances repeatedly within a 12-month period, but no single substance predominates (American Psychological Association, 1994). It has also been used to refer to multiple lifetime substance dependence diagnoses (Agrawal, Lynskey, Madden, Bucholz, & Heath, 2006). In this paper, the term ‘multiple substance dependence diagnoses’ will be used to refer to meeting lifetime criteria for two or more substance dependence diagnoses, in order to avoid confusion with the DSM-IV definition of polysubstance dependence.

In sum, evidence suggests that there are at least some clinical and family background differences between male and female dependent heroin users; that polydrug use is problematic amongst this population; and that polysubstance dependent individuals have more adverse family backgrounds and self-harming behaviours than mono-substance dependent individuals. To our knowledge the relationship between sex, multiple substance dependence diagnoses, mental health and family background variables in a heroin dependent sample has not been tested in a comprehensive model. The current study is based on an extensive interview with a large sample of dependent heroin users recruited in Sydney, Australia. It provides a different focus from the previous Australian study of heroin users, the Australian Treatment Outcome Study (ATOS). ATOS was a longitudinal study of heroin users in treatment, with a sample size of 825 (Ross et al., 2005). Its focus was on treatment and its outcomes. The current study explores the characteristics and family backgrounds of

dependent heroin users, their other substance dependence, and their mental health problems. In sum, the current study allows us to test the strength of the relationships between several additional variables. Thus, this paper aims to:

1. Describe sex differences in the family history, socio-demographic and clinical characteristics of a heroin dependent sample. It is hypothesised that women will have higher rates of all mental disorders but not antisocial personality disorder (ASPD), higher rates of sexual abuse and family dysfunction, lower rates of incarceration, higher rates of suicidal behaviour and lower rates of other substance dependence, than men.
2. Identify clinically salient correlates of multiple substance dependence diagnoses for males and females. Separate models will be used for males and females, with number of lifetime substance dependence diagnoses (other than heroin) as the dependent variable in both models. It is expected that higher numbers of substance dependence diagnoses will be associated with poorer outcomes across most mental health and clinical variables, although there may be different associations by sex.

2. Method

2.1. Procedure

This study used data from the Comorbidity and Trauma Study, a retrospective case-control study examining genetic and environmental factors contributing to opioid dependence liability. The study was funded by the National Institute of Drug Abuse, and was run in collaboration with Washington University, the Queensland Institute of Medical Research, and the National Drug and Alcohol Research Centre (NDARC), University of New South Wales. Participants were recruited from methadone clinics in the greater Sydney area, representing approximately one quarter of the clinical population in that area. Written informed consent was obtained from all participants. Ethics approval was obtained from the ethics committees of the University of New South Wales, Washington University, the Queensland Institute of Medical Research, and the area health service ethics committees governing the participating clinics. Participants were reimbursed AU\$50.00 for out-of-pocket expenses.

2.2. Participants

Participants (n = 1513) were recruited from public and private opioid pharmacotherapy clinics in the greater Sydney region between November 2005 and March 2008. At a minimum, patients receiving opioid replacement therapy (ORT) in New South Wales undergo an assessment for opioid dependence and a medical review including testing for blood borne viruses. In ORT clinics, recent drug use for a range of drug classes is assessed, and a mental state examination is undertaken. Each ORT recipient must be assigned a case manager. The provision of mental health services, however, differs across services. Some, but not all, ORT clinics are part of a larger drug and alcohol service with access to psychiatrists, counsellors, and psychologists. Some general practitioners in private practice also prescribe ORT and the provision of services is different again in this setting.

Respondents were eligible if they were aged 18 years or over; had an adequate understanding of English (in order to provide informed consent and participate in a long interview); and had participated in pharmacotherapy maintenance treatment for heroin dependence. Individuals reporting recent suicidal intent or who were psychotic were excluded from participating in the study.

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