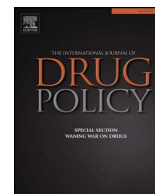




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Mental health, drug use and sexual risk behavior among gay and bisexual men

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ABSTRACT

Background: Compared to the general population, among gay and bisexual men (GBM) prevalence rates of anxiety and depression, and of drug use, are high.

Objective: This paper explores the relationship between mental health, sexual risk behavior, and drug use among Australian GBM. We identify factors associated with indicators of poor mental health.

Methods: Between September 2014 and July 2017, 3017 GBM responded to measures of anxiety and depression in an online cohort study of drug use.

Results: Mean age was 35.3 years (SD 12.8). 17.9% screened positive for current moderate-severe anxiety and 28.3% for moderate-severe depression. The majority (52.2%) reported use of illicit drugs in the previous six months, including 11.2% who had used methamphetamine. One third had high (20.4%) or severe (10.6%) risk levels of alcohol consumption, and 18.3% who were current daily smokers. Most illicit drug use in general was not associated with either anxiety or depression, but men who used cannabis were more likely to show evidence of depression ($p = 0.005$). Among recent methamphetamine users, 28.0% were assessed as dependent: dependent users were more likely to show evidence of both depression and anxiety than were non-dependent users. High or severe risk drinking was associated with depression and daily tobacco use was associated with both anxiety and depression. Depression and anxiety was associated with: less personal support, viewing oneself as 'feminine', and being less socially engaged with gay men. Sexual risk behavior was not associated with either depression or anxiety.

Conclusion: Prevalence of anxiety and depression was high, as was prevalence of licit and illicit drug use. Substance use was associated with anxiety and depression only when the use was considered problematic or dependent. Social isolation and marginalization are strong drivers of poor mental health, even within this population for whom anxiety and depression are common.

Introduction

In recent years, gay and bisexual men (GBM) have been represented as engaging in unrestrained risk-taking through a 'dangerous' mix of drugs and sex (or 'chemsex') exacerbated by psychological vulnerabilities (Stuart, 2016). Concerns around chemsex have usually been based on an assumed causative link between drug use and poor mental health and an assumption that drug taking leads to sexual risk taking.

Compared to other men, GBM report high rates of depression and anxiety (Cochran, Sullivan, & Mays, 2003; King et al., 2008; Meyer, 2003), but there are few data estimating the prevalence of depression

and anxiety among Australian GBM. Where such data exist, they suggest relatively high rates (Lyons, Pitts, & Grierson, 2013; Mao et al., 2009; McLaren, Jude, & McLachlan, 2008). These high prevalences are often ascribed to experiences of homophobia or wider societal stigma (Meyer, 2003), and for this reason peer-support in general, and greater social engagement with gay men tend to counter the negative mental health effects of homophobic stigma (Mao et al., 2009; McLaren et al., 2008).

GBM also report high prevalence of illicit drug use (Cochran, Ackerman, Mays, & Ross, 2004; Conron, Mimiaga, & Landers, 2010; Hickson, Bonell, Weatherburn, & Reid, 2010; Roxburgh, Lea, de Wit, &

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Degenhardt, 2016). Illicit drug use, and use of methamphetamine in particular, has been associated with sexual risk behavior and HIV infection among GBM (Halkitis, Green, & Mourgues, 2005; Prestage et al., 2007; Prestage, Grierson, Bradley, Hurley, & Hudson, 2009; Prestage, Jin et al., 2009; Vosburgh, Mansergh, Sullivan, & Purcell, 2012). Drug use and sexual risk behavior are often linked to poor mental health (Halkitis, Fischgrund, & Parsons, 2005; Halkitis, Green et al., 2005; Kurtz, 2005; Rosario, Schrimshaw, & Hunter, 2006).

Few Australian studies have investigated the association between mental health and sexual risk-taking, and there is little evidence for such an association at a population level (Lyons et al., 2013). Despite a strong independent association between illicit drug use and sexual risk behavior, event-level data indicate that GBM may be as likely to use drugs on occasions of condom use as they are on occasions of non-condom use (Prestage et al., 2005; Prestage, Jin et al., 2009). For many GBM, drug use is primarily for the purposes of intensive sex partying, to enhance their sexual experiences, and the association with sexual risk is a foreseeable but not purposeful consequence (Halkitis, Green et al., 2005; Hurley & Prestage, 2009; Weatherburn, Hickson, Reid, Torres-Rueda, & Bourne, 2017). Although the illicit drugs commonly used for these purposes are often referred to as ‘club drugs’ or ‘party drugs’ (Halkitis, Green et al., 2005; Halkitis, Palamar, & Mukherjee, 2007), previous Australian research has also highlighted the key role of erectile dysfunction medication (EDM; Prestage, Jin et al., 2009). GBM use these medications to enable more intense sexual function during sex partying, and to counter the effects of other drugs on their ability to achieve and maintain erections (Hammoud et al., 2017). In separate analyses, we have found that during intensive sex partying, GBM commonly use the combination of methamphetamine, HIV pre-exposure prophylaxis (Truvada™), and EDM (particularly Viagra™), or ‘MTV’ (Hammoud, Vaccher, & Prestage, 2018).

In this paper, we examine whether poorer mental health is associated with greater likelihood to use drugs and engage in sexual risk behavior among GBM. We also investigate how these relationships between mental health, drug use, and sexual risk behavior are affected by wider psychosocial factors known to influence health behaviors and outcomes among GBM, including social support, community engagement, and experiences of stigma.

Methods

The methods of the *Following Lives Undergoing Change (Flux) Study* – an online prospective observational study of Australian GBM – are described in greater detail elsewhere (Hammoud et al., 2017). In brief, participants were recruited between August 2014 and July 2017 via gay community websites and online media, Facebook, mobile phone applications, and gay sexual networking websites. Participants provided informed consent and ethical approval was provided by the Human Research Ethics Committee of UNSW Australia.

Measures

The online baseline questionnaire included: demographic items, questions on sexual identity, HIV testing history and self-reported serostatus. Men were asked about their sexual behavior and condom use in the previous six months with three categories of partner type, regular (‘boyfriend’) partners, ‘fuckbuddies’, and casual partners (Bavinton et al., 2016; Down, Ellard, Bavinton, Brown, & Prestage, 2017).

Mental health measures included the generalised anxiety disorder assessment (GAD7) and the patient health questionnaire (PHQ9) to measure anxiety and depression respectively (Kroenke, Spitzer, & Williams, 2001; Spitzer, Kroenke, Williams, & Löwe, 2006). Social connectedness was also measured, including a previously used measure of social engagement with gay men based on two items measuring: proportion of male friends who are gay; and amount of free time spent with gay male friends (Zablotska, Holt, & Prestage, 2012). Measures of

other psychosocial states included a direct question on self-perceived masculinity/femininity and, in 2017, the Rosenberg measure of global self-esteem (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995).

Men were asked if they had ever used each illicit drug type, and how frequently they had used each drug in the previous six months (‘never’, ‘once or twice’, ‘at least monthly’, ‘every week’, ‘daily’). We used the Alcohol Use Disorders Identification Test (AUDIT-C) alcohol screen to identify active alcohol use disorders (Saunders, Aasland, Babor, De la Fuente, & Grant, 1993). Men with a score of 6–7 were classified as ‘high risk’ and those with a score of 8 or above as ‘severe risk’. Regarding use of tobacco and EDM, men were asked if they had ever used these substances, and how frequently they had done so in the previous six months (less than once a month, monthly, weekly, every second day, and daily).

Men were also asked about whether they were concerned about their drug and whether someone close to them had expressed concern about their drug use. The severity of dependence scale (SDS) is often used to measure psychological dependence on certain drugs (Gossop et al., 1995; Lea, de Wit, & Reynolds, 2014; Topp & Mattick, 1997). It was included here to measure methamphetamine dependence, with a score of 4 indicating dependence in an individual.

Participants and sample

Men who lived in Australia, aged sixteen years and six months or above, were eligible for participation if they were gay- or bisexual-identified or had sex with another man in the previous year. Recruitment into the Flux Study occurred between August 2014 and July 2017. Overall, 3253 completed the minimum data requirements for the online questionnaire. There were 236 men who did not respond to questions on either the GAD7 or PHQ9 measures and were excluded from these analyses, leaving a sample of 3017 men. Compared to the 3017 men included here, the 236 excluded men were younger (Mean = 35.3 vs Mean = 31.6; Odds Ratio (OR) = 1.02; 95% Confidence Interval (CI) = 1.01–1.03; $p < .001$) and less likely to be university-educated (55.4% vs 43.6%; OR = 0.62; 95%CI = 0.48–0.81; $p < 0.001$), but were otherwise similar.

Analysis

Data were analyzed with SPSS™ version 23 software. Descriptive statistics were used to describe the demographic and other characteristics of men with evidence of anxiety and depression. For univariate analyses of whether they had evidence of anxiety and, separately, of whether they had evidence of depression, we included: age, education, cultural background, social engagement with gay men, sexual identification, level of personal support, relationship status, HIV status, and sexual risk behavior. Categorical variables were analyzed using Pearson’s chi-square test and *t*-tests were used for continuous variables. We used Type I error of 5% for these analyses. To assess statistical associations with depression or anxiety, we used logistic regression models and presented Adjusted Odds Ratios (AOR) and 95% Confidence Intervals (CI). Associations with a *p*-value of less than 0.05 in univariate analyses were included in the multivariate analyses.

Results

Sample characteristics

The mean age of the 3017 men included here was 35.3 years (SD 13.3); median age was 32. Most (71.8%) were of Anglo-Celtic background and the majority (55.4%) was university-educated. Nearly half were in managerial (16.9%) or professional (28.4%) employment. Most men (82.4%) had ever been tested for HIV with 6.7% reporting they were HIV-positive.

Participants predominantly identified with the term ‘gay’ either

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