



Prevalence and patterns of smoking, alcohol use, and illicit drug use in young men who have sex with men



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ARTICLE INFO

Article history:

Received 14 January 2014

Received in revised form 6 May 2014

Accepted 7 May 2014

Available online 17 May 2014

Keywords:

Young men who have sex with men

Substance use

Alcohol

Cigarette smoking

ABSTRACT

Background: Young men who have sex with men (YMSM) are substantially more likely to use illicit drugs and other substances compared to their heterosexual peers. Substance use during adolescence has critical implications for long-term physical and mental health, and among YMSM may lead to HIV infection. The goal of the current study was to describe lifetime and past six month prevalence and patterns of substance use across multiple substances in a community sample of racially-diverse YMSM.

Methods: Participants were 450 YMSM aged 16–20 living in Chicago and surrounding areas who were recruited beginning December, 2009 using a modified form of respondent driven sampling. Analyses were conducted with multivariate logistic regression and latent class analysis (LCA).

Results: Prevalence of substance use was high in this sample of majority racial minority YMSM, and only 17.6% reported no substance use during the past six months. Black YMSM had lower prevalence of use of all substances except marijuana compared to White YMSM, while Latino YMSM had lower prevalence of alcohol, marijuana, and club drug use. Bisexual YMSM reported higher prevalence of cigarette smoking, stimulant use, and club drug use compared to gay/mostly gay YMSM but lower numbers of bisexual participants limited the ability to detect statistically significant differences. LCA found that YMSM fell into three general categories of substance users: alcohol and marijuana users, polysubstance users, and low marijuana users.

Conclusions: Analyses reveal important group differences in prevalence and patterns of substance use in YMSM that have important implications for intervention.

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1. Introduction

Young men who have sex with men (YMSM) are substantially more likely to use illicit drugs and other substances compared to their heterosexual peers, including higher prevalence of cigarette smoking (Corliss et al., 2013; Garofalo et al., 1998; Marshal et al., 2009), alcohol use and binge-drinking (Garofalo et al., 1998; Hatzenbuehler et al., 2008; Marshal et al., 2009), and illicit drug use (Corliss et al., 2010; Garofalo et al., 1998; Kelly et al., 2006; Newcomb et al., 2014; Tucker et al., 2008). Substance use during adolescence has critical implications for long-term physical and mental health (NIDA, 2009; SAMHSA, 2012; WHO, 2010),

including potentially severe impairments in neurocognitive functioning (Squeglia et al., 2009; Zeigler et al., 2005).

Several notable studies have documented substance use prevalence in community samples of YMSM and probability-based samples of U.S. high school students. However, the current literature is limited in many ways. First, studies have often focused on prevalence and/or frequency of use of a single substance (Garofalo et al., 2007; Wong et al., 2008), class of drugs (Clatts et al., 2005), or composite measure (Newcomb et al., 2011; Traube et al., 2013; Wong et al., 2010), which limits the ability to compare prevalence of use across multiple substances. Knowledge of demographic differences in substance use among YMSM is limited. While several studies have reported demographic differences in use of specific substance types among YMSM (Clatts et al., 2005; Garofalo et al., 2007; Kipke et al., 2007; Newcomb et al., 2011; Traube et al., 2013; Wong et al., 2008, 2010), few have done so across multiple substances, which limits our understanding of patterns of subgroup differences. Finally, studies have rarely (if ever) reported age of

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initiation of substance use among YMSM. This information would help identify the developmental periods that are most important to target for substance use prevention.

Certain subgroups of YMSM are likely at even higher risk for substance use than others. Evidence suggests that bisexual youth report the highest prevalence of substance use compared to heterosexual and gay youth (Austin et al., 2004; Marshal et al., 2009; McCabe et al., 2004; Newcomb et al., 2014; Russell et al., 2002); but see Newcomb and colleagues (Newcomb et al., 2013, 2012) for contradictory findings. Evidence also suggests that Black YMSM (and to a lesser degree Hispanic/Latino YMSM) report lower prevalence and frequency of substance use compared to White YMSM (Clatts et al., 2005; Kipke et al., 2007; Newcomb et al., 2011; Traube et al., 2013; Wong et al., 2008, 2010), which is consistent with research in the general population (NIDA, 2009; SAMHSA, 2012; Wallace et al., 2003).

Some recent investigations have utilized latent class analysis (LCA) in general samples (Agrawal et al., 2007; Monga et al., 2007; Ramo et al., 2010; Shin et al., 2010; Smith et al., 2011) to examine patterns of substance use by empirically deriving groups of individuals who tend to use similar substances. This approach can identify patterns of polysubstance use, as well as demographic differences in these empirically derived groups. To our knowledge this approach has not been used in a sample of YMSM, which would help to inform prevention strategies by more precisely identifying low- and high-risk groups of YMSM.

The goal of the current study was to describe prevalence of substance use across multiple substances in a community sample of ethnically diverse YMSM, and to investigate demographic differences in prevalence and patterns of use. We aimed to: (1) describe lifetime use, recent use (e.g., past 6 month), and age of onset of multiple substances, (2) identify demographic differences in substance use within YMSM, including age, race, and sexual orientation differences, and (3) use LCA to examine patterns of polysubstance use, and demographic differences in likelihood of belonging to these empirically derived groups. We hypothesized that bisexual and White YMSM would endorse the highest prevalence of substance use across all substances. Given the dearth of research on patterns of substance use within YMSM using LCA, we made no specific hypotheses with regard to this aim.

2. Methods

2.1. Participants and procedures

Data were taken from the baseline interview for Crew 450, an ongoing longitudinal study designed to analyze the prevalence, course, and predictors of a syndemic of psychosocial health issues linked to HIV among YMSM. Inclusion criteria were: (1) between 16 and 20 years of age at baseline; (2) birth sex male; (3) spoke English; (4) had a previous sexual encounter with a man or identified as gay or bisexual; and (5) were available for 2 year follow-up. A modified form of respondent driven sampling (RDS; Heckathorn, 1997) was used to recruit participants. The initial convenience sample (i.e., “seeds”; $N = 172$; 38.2%) was recruited from the community through targeted in-person and school outreach, geo-social network applications (i.e., Grindr and Jackd) and flyers posted in community settings frequented by YMSM.

A total of 450 participants were recruited between December, 2009 and February, 2013. The baseline assessment consisted of two visits scheduled approximately one week apart. Participants were paid \$70. All data were collected using computer-assisted self-interview (CASI) technology with audio instructions. The protocol was approved by the Institutional Review Boards (IRBs) with a waiver of parental permission under 45 CFR 46, 408(c) (Mustanski, 2011). Participants provided written informed consent/assent, and mechanisms to protect participant confidentiality were utilized (i.e., a federal certificate of confidentiality).

2.2. Measures

2.2.1. Demographic characteristics. The demographic interview assessed participant age, race/ethnicity, sexual orientation, self-reported HIV status (confirmed with OraQuick HIV antibody test), living situation, and educational attainment. Participants self-reported sexual orientation as: “only gay/homosexual”,

“mostly gay/homosexual”, “bisexual”, “mostly heterosexual”, “only heterosexual”, or “other”.

2.2.2. Cigarette smoking (CDC, 2009). Lifetime and past 30 day prevalence of cigarette smoking were assessed with the following items, respectively: “Have you ever smoked a whole cigarette?”, and “During the past 30 days, on how many days did you smoke cigarettes?” Responses for past 30 day smoking were presented on a 7-point ordinal scale. Prevalent smoking was defined as at least one day of smoking in the past 30 days.

2.2.3. Alcohol use and binge drinking (CDC, 2009). Lifetime and past 6 month prevalence of alcohol use were assessed by participants’ positive endorsement of the following items, respectively: “Have you ever had a drink of alcohol (beer, wine, or liquor) other than a few sips?” (yes/no), and “Have you had a drink of alcohol during the past 6 months?” (yes/no). Prevalence of past 6 month binge-drinking was assessed with the following item: “During the past 6 months, how often did you have 5 or more drinks containing alcohol within a two-hour period?” Responses for this item were presented on a 10-point ordinal scale. Prevalent binge-drinking was defined as at least one day of binge-drinking in the past 6 months.

2.2.4. Illicit drugs (CDC, 2009; NIAAA, 2003). Lifetime and past 6 month prevalence of illicit drug use were assessed with the following items, respectively: “Have you ever used [drug name]?” and “During the past 6 months, how many times did you use [drug name]?” Responses were presented on a 7-point ordinal scale. Prevalent drug use was defined as at least one day of use in the past 6 months. Illicit drugs included: marijuana, cocaine, methamphetamines, prescription stimulants, prescription depressants, heroin, other opiates (e.g., morphine, codeine, Demerol), MDMA (ecstasy), psychedelics (e.g., PCP, LSD, mescaline, mushrooms), gamma hydroxybutyrate (GHB), ketamine, poppers, other inhalants (e.g., glues, spray paint, cleaning fluids), Viagra, and anabolic steroids.

2.2.5. Age of onset (CDC, 2009). Age of onset of substance use was assessed with the following question: “How old were you when you [smoked a whole cigarette for the first time/had your first drink of alcohol other than a few sips/used {drug type} for the first time]?” Response options were on a 7-point ordinal scale: “I have never [smoked a whole cigarette/had a drink of alcohol other than a few sips/used {drug type}]”, “8 years old or younger”, “9 or 10 years old”, “11 or 12 years old”, “13 or 14 years old”, “15 or 16 years old”, and “17 years old or older”.

2.3. Analyses

We calculated prevalence rates of lifetime and recent cigarette smoking, alcohol use, and illicit drug use in the entire sample. Next, logistic regression was performed to estimate the odds ratios for group differences in prevalence of recent substance use (i.e., age, race and sexual orientation). In addition, LCA was conducted using Mplus software (Muthen and Muthen, 1998) to identify groups with comparable response patterns of past 6 month alcohol, marijuana, stimulant, club drug, and inhalant use. We evaluated relative model fit using adjusted Bayesian information criterion (BIC) with lower values indicating greater model fit. In addition, the Lo, Mendell, and Rubin likelihood ratio test (LMR-LRT), the bootstrap likelihood ratio test (BLRT) and the entropy value were used to determine the appropriate number of latent classes. A significant p -value for both the LMR-LRT and BLRT tests indicates improvement in model fit when comparing a k and $k - 1$ class model. Entropy values range from zero to one with higher values indicating greater certainty in model classification (Jung and Wickrama, 2008). After the appropriate number of classes was determined, LCA with covariates was conducted in order to evaluate the predictive effect demographic characteristics had on latent class assignment. This statistical technique concurrently estimates latent class assignment and regresses this latent variable on a predefined set of covariates using multinomial logistic regression. To evaluate the predictive effect each covariate had on latent class assignment, an initial bivariate multinomial logistic regression was performed and only demographic characteristics that were found to be significant predictors ($p < 0.05$) were included in the final multivariate model.

3. Results

Table 1 presents the full demographic characteristics of the sample. Mean age of the sample was 18.9 years ($SD = 1.3$), and 25.8% was under age 18. Eighty-two percent were racial/ethnic minorities, which is higher than the 69% estimated by the US Census Bureau (<http://factfinder.census.gov>) in the city of Chicago, but not substantially different from estimates for areas neighboring the primary sites of data collection. In terms of sexual orientation, 50.2% identified as only gay/homosexual, 22.9% as mostly gay/homosexual, 21.3% as bisexual, 2.4% as mostly heterosexual, 0.7% as only heterosexual, and 2.4% as “other”.

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