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Age of Sexual Initiation, Psychiatric Symptoms, and Sexual Risk Behavior among Ecstasy and LSD Users in Porto Alegre, Brazil: A Preliminary Analysis

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Abstract

Ecstasy and LSD use is widespread in large Brazilian cities, but there is limited information on their use among young, middle-class, club goers in Brazil. We conducted standardized face-to-face interviews with 200 male and female ecstasy and/or LSD users, focusing on drug use and sexual history, current risk behaviors, and psychiatric symptomatology. Participants with early sexual debut (before 14) were more likely to report lifetime use of marijuana and powder and crack cocaine than those with later sexual initiation. Early sexual debut was associated with past year sexual risk behaviors, including having sex while high (Prevalence Ratio (PR)=1.3), having two or more sex partners (PR=1.3), as well as history of sexual abuse (PR=13.6). Depression and anxiety scores were similar by age of sexual initiation. The implications of these findings are discussed.

Introduction

Recent international reports suggest a trend of stabilization in ecstasy—(methylenedioxymethamphetamine, or MDMA)—(Volkow, 2006) and lysergic acid diethylamide (LSD) (Leshner, 2001) use in many parts of the world, with European data indicating an actual decline in annual prevalence rates. Nevertheless, ecstasy and LSD use continues to grow in some areas, with recent data documenting increased prevalence of use in Central and South America (United Nations Office on Drugs and Crime [UNODC], 2008). Recent reports from Brazil reflect an increase in the prevalence of ecstasy use, as well as increases in seizures, trafficking and manufacturing of ecstasy (UNODC, 2008). Large cities in Brazil now report widespread ecstasy and LSD use compared to previous studies (Andrade, Duarte, & de Oliveira, 2010; Galduróz, Noto, Nappo, & Carlini, 2005), occurring typically among urban, young, middle- and upper-class club goers (Battisti, Noto, Nappo, & Carlini, 2006; De Almeida & Silva, 2005; De Micheli & Formigoni, 2004; Soldera, Dalgalarrondo, Corrêa Filho, & Silva, 2004), a pattern that has been seen in other countries as well (Fendrich, Wislar, Johnson, & Hubbell, 2003; Parks & Kennedy, 2004; Ramo, Grov, Delucchi, Kelly, & Parsons, 2010). At the same time, little is known about the characteristics of club drug users in Brazil, particularly with regard to the association of ecstasy and LSD and their effects on sexual behaviors and psychiatric symptomatology. Previous work done elsewhere has demonstrated an association between ecstasy use and risky sexual behavior (Klitzman, Greenberg, Pollack, & Dolezal, 2002) and increased psychiatric symptomatology (Breen et al., 2006; Keyes, Martins, & Hasin, 2008; Montoya, Sorrentino, Lukas, & Price, 2002) as well. Nevertheless, these phenomena have yet to be investigated in the Brazilian context.

Early sexual initiation has been associated with a series of adverse health consequences in later life, including risky sexual behavior, unintended pregnancy, abortion, sexually transmitted infections (Ma et al., 2009), early drug initiation, and higher risk of tobacco,

alcohol, and cannabis use, as well as higher rates of drug abuse and dependence. Recent ecstasy use has been associated with early sexual initiation, concurrent use of other drugs and current risky sexual behaviors (Brook, Brook, Zhang, Cohen, & Whiteman, 2002; Coker et al., 1994; McGue & Iacono, 2005; Poikolainen et al., 2001; Stanton, Li, Cottrell, & Kaljee, 2001; Staton et al., 1999). Regarding LSD use, however, little is known in this regard. A number of social and legal problems associated with early sexual initiation have also been documented, including a greater likelihood of involvement in drug dealing, carrying weapons and violence (Coker, et al., 1994). Although some studies did not show this type of relationship (Li et al., 2001), the bulk of scientific findings on this topic characterizes early sexual initiation as a major risk factor for later problem behavior in the aforementioned areas.

Sexual abuse is clearly identified—as is early sexual initiation—as a major risk factor for psychiatric illness, and wide-ranging studies have also linked sexual abuse to numerous drug-related consequences, such as early alcohol use, regular tobacco use, illicit drug use, abuse and dependence, and early injection drug use, along with higher rates of prescription drug abuse (Bensley, Spieker, Van Eenwyk, & Schoder, 1999; Duncan et al., 2008; Harrison, Hoffmann, & Edwall, 1989; Hayatbakhsh, Najman, Bor, O'Callaghan, & Williams, 2009; Nelson et al., 2006; Ompad et al., 2005; Sartor et al., 2007). With regard to drug initiation, recent ecstasy use has been related to a history of early sexual initiation, concurrent use of other drugs and current risky sexual behavior (Novoa, Ompad, Wu, Vlahov, & Galea, 2005). Little is known about LSD use and its relation with early sexual debut or associated behaviors.

In Brazil, ecstasy and other club drug use is an emerging phenomenon. Although ecstasy was first introduced in Brazil as early 1994, by most accounts its use remained localized and sporadic until recent years. The few published studies on this topic in Brazil suggest that ecstasy users are often polydrug abusers—using more than one drug at the same time—and have significantly higher rates of illicit and prescription drug abuse than do non-ecstasy users (De Almeida & Silva, 2003; De Almeida & Silva, 2005). We sought to understand the emerging club drug epidemic in the South of Brazil, and to investigate the extent to which Brazilian club drug users are at high risk for both physical and mental health consequences. In particular, this paper examines the connections of club drug use, risky sexual behavior, early sexual initiation, and psychological functioning in a sample of urban, young, LSD and/ or ecstasy users in Porto Alegre, a large metropolitan capital city in the South of Brazil.

Method

Study eligibility criteria included being age 18 to 39; and having used ecstasy and/or LSD at least once in the 90 days prior to interview. Exclusion criteria included currently participating in treatment for drug or alcohol problems. Recruitment was conducted from March through July of 2010, using a venue based sampling approach. Project staff, in conjunction with "key informants" in the club scene, mapped the primary club "hot spots" (bars featuring electronic music, nightclubs, rave parties, and parks), where potential participants were known to congregate. Potential participants were approached by project staff in these locations on Thursday, Friday, and Saturday evenings or late nights, as well as on Sunday afternoons in local parks where groups of participants would get together).

Typically, the "club scene" in Porto Alegre is concentrated in highly localized areas of specific neighborhoods, ranging from upscale areas with sophisticated night clubs in which well-known DJs perform, to simpler clubs that attract lower income club goers. Club goers in Porto Alegre tend to be limited in the numbers of clubs they frequent, having established relatively insular groups in a select few venues. Many also form online chat communities (to

learn about upcoming music events, as well as to discuss what occurred while "chilling out" (recovering from the *"balada"*—a long night out with music and drugs). Some of these chat members include DJs or others involved in the production of electronic music activities, and they use these groups to publicize the "electronic culture."

Much of the drug-related activity and partying happens not only inside club venues, but also on the queuing lines that form at the entrance. Many patrons spend substantial time outside the clubs, engaging in alcohol and drug use, and meeting friends and acquaintances. The queues served as good contact points for field staff to approach potential participants, since it would not be possible to collect data inside the clubs due to the noise and atmosphere. On the specific dates for data collection, the interviewers would cover predetermined contact sites in pairs or small groups, and interviews were obtained in loco. Field interviewers were trained to collect data with particular emphasis on elements of rapport, street terminology of drug use, and confidentiality and privacy of the information obtained. All interview data was recorded using brief, paper and pencil questionnaires (see below). At the end of the interview, which would last on average 15 minutes, participants received a lunch voucher as a compensation for their participation. The project was approved by both The University of Delaware Institutional Review Board and the Hospital de Clinicas Ethics Committee and Office of Human Subjects Protection at the Federal University of Rio Grande do Sul.

Instrumentation

In order to identify eligible participants, we developed a brief screening form, based on forms developed in the U.S. for similar populations (Ibañez, Kurtz, Surratt, & Inciardi, 2010; Inciardi, Surratt, Kurtz, & Cicero, 2007). A shortened version of the GAIN (Global Appraisal of Individual Needs) interview was utilized as the primary data collection instrument (Dennis, Titus, White, Unsicker, & Hodgkins, 2002). This instrument comprises eight sections to ascertain specific information on (1) demographics, (2) substance use, (3) physical health, (4) risk behaviors, (5) mental health, (6) environment, (7) legal, and (8) vocational. Each of the sections contains questions on the recency of problems and the intensity of symptoms. Interview items are combined in scales and subscales, and these can be used for DSM-IV diagnoses. The GAIN has been used both in adolescents and adults, in a variety of settings, and is the main clinical and research measure for many NIDA-funded multicentric studies, with strong psychometric properties (Chan, Passetti, Garner, Lloyd, & Dennis, 2010). Cronbach alphas for all scales and subscales were over .7 (more detail on scale development can be found at http://www.chestnut.org/LI/gain/index.html).

The adaptations were focused on shortening the instrument, since it was to be used for brief intercept interviewing in street locations. The following sections were kept in the final format: (1) substance use, (2) mental health, (3) risk behaviors, and (4) vocational, but were shortened and adapted for the Brazilian context. Questions related to basic demographics assessed age, gender, education in terms of years of schooling, and monthly individual income.

Sexual behavior questions were dichotomous, and covered the period of 12 months prior to the interview. Participants were also asked to report frequency of vaginal, oral, and anal sex activity and condom use in the 90 days prior to interview.

Substance use was assessed by asking participants how many times a particular substance was used in the 90 days prior to interview and lifetime. Substances included a comprehensive list of both illicit drugs and prescription-type drugs.

As for psychiatric symptoms, these were assessed using the mental health section of the GAIN with focus on anxiety and depression. Depressive symptoms were assessed by 9 items

("During the past 12 months, have you had significant problems with feeling very trapped, lonely, sad, blue, depressed, or hopeless about the future?"). Anxiety symptoms were assessed by 12 items, such as: "During the past 12 months, have you had significant problems feeling very anxious, nervous, tense, scared, panicked or like something bad was going to happen?" All scale items used a dichotomous response format (yes/no). Total scores on each of the subscales were additive.

Analytic plan

Data analyses were conducted using SPSS/PASW (Statistical Package for the Social Sciences) v.18. Frequencies and percentages were obtained for all variables of interest. Condom use and drug use variables were recoded as dichotomous (yes/no) variables for analysis.

Our primary goal in this analysis was to examine patterns of sexual risk among this sample of club drug users, including early sexual debut and its association with other types of drug use, sexual behaviors and general demographic factors. We defined early sexual initiation as any type of sexual relation before the age of 14.

Dichotomous variables were compared using the Chi-Square test with Yates correction. Continuous variables were compared using Student's *t* test for independent samples. We describe the Prevalence Ratios (*PR*) for the different outcomes and their respective confidence intervals (*CI*). *PR* was adjusted for potential confounders using Poisson Regression with robust variance.

Results

Subjects in the study were predominantly male—around 70%, and most had at least 11 years of schooling. The majority were either employed or were students, and the most frequent monthly individual income was the equivalent of approximately US$ 600, which is about three times the monthly minimum wage in Brazil. We found no statistical differences ($P<0.05$) in demographic characteristics with regard to age of sexual debut and these are described in Table 1. The mean age of the sample was 22.8 ($SD = 4.5$). As for race, all study participants were white (Caucasian).

With regard to overall drug use, the most frequently reported use—both lifetime and for the 90 days prior to interview—were alcohol, marijuana, ecstasy and LSD, as can be seen in Figure 1. The average lifetime number of drugs used by the participants was 5.5 ($SD=1.7$), with no gender differences ($P=0.198$). The average number of different drugs used for the 90 days prior to interview was 3.8 ($SD=1.3$), with no difference between genders ($P=0.847$).

The typical sequence reported for drug use onset mentioned for at least half of the sample was as follows: alcohol= 13,5 ($SD=2$), marijuana=15.5 ($SD=2.7$), inhalants=16.5 ($SD=3.7$), crack=17.1 ($SD=2$), cocaine=17.8 ($SD=3$),, ecstasy=19.5 ($SD=3.9$) and finally LSD=19.6 ($SD=3.7$). The median of days of drug use among those with early sexual debut was 86 (Interquartile range: 39 to 134), and the median of days of drug among the late debut group was 52 (Interquartile range: 34 to 88) ($P<0.001$).

Overall, the mean age reported for first sexual relation (either vaginal, oral, or anal) was 14.7 ($SD=2.2$), with no difference between genders ($P=0.190$). With regard to sexual behavior during the previous 12 months, 78.5% of the sample reported having had sex under the influence of alcohol or drugs, 66.5% engaged in unprotected sex, 62.5% reported sex with two or more partners, and 41% reported anal sex. Anal sex differed by gender: 47.5% among women and 26.2% among men ($P=0.008$). Significant differences by gender were

also observed for using drugs, gifts, or money to obtain sex (men 16.5%, vs. women 1.6%, P=0.006), and having two or more sex partners (men 67.6%, vs. women 50.8%, P=0.036). Twenty-five (30.1%) of those reporting sex before the age of 14 reported current same-sex relations, vs. 30 (25.6%) who had their first sexual encounter after 14, with no significant difference (P=0.590). (*RP*: 1,2 *CI* 95%: 0.7–1.8).

Although we found no significant differences in demographic variables and early/later sexual debut, we observed a trend for gender and education and these were included as controls in the multivariate analyses displayed in Table 2. We found a significant association for the variables *had sex while high on alcohol or drugs, had multiple sexual partners (last 12 months),* and *sex trading,* adjusted for gender and education.

Overall, participants reported 0–1 (none or minor) depression symptoms in 30.5% of the cases, 2–5 (moderate) symptoms in 50%, and 6–9 (severe) symptoms in 19.5% of cases. For anxiety symptoms, these were reported as none or minor (0–1) in 34% of the cases, moderate (2–6) in 55.5%, and severe (7–12) in 10.5% of cases. We found no significant association with age of sexual debut, even when adjusting for potential confounders such as gender and education. None or minor depressive symptoms were reported in 23 (27.7%) of the participants who had sex before 14 and 38 (32.5%) for the other group, and moderate/ severe symptoms were reported by 60 (72.3%) and 79 (67.5%), respectively (P=0.57). None or minor anxiety symptoms were reported by 23 (27.7%) of early sexual debut participants and 45 (38.5%) of later sexual debut participants, and moderate/severe by 60 (72.3%) and 72(61.5%), respectively (P=0.15).

Table 3 shows that participants who reported early sexual debut reported higher lifetime prevalence of all types of substance use; however, when adjusted for gender and education, significant associations were found for marijuana, inhalant use and cocaine and crack use.

Discussion

Recent surveillance data have indicated that the use of club drugs is a widespread and growing problem in Brazil, and this study provides some of the first systematic data on ecstasy and LSD use among young, urban, middle class club goers in Porto Alegre, Brazil.

Overall, drug use was frequent in this sample, particularly for alcohol and marijuana. This is similar to earlier findings that documented early initiation and nearly universal use of alcohol and marijuana among club goers in Miami (Kurtz, Inciardi, Surratt, & Cottler, 2005). Drugs associated with the "club scene," in this case ecstasy and LSD, were reported at much later ages of onset (around 19). This may have to do with having the resources to purchase these drugs, which are typically more expensive in the Brazilian market compared to alcohol and marijuana. Also, access is an important issue. The legal age of entry to clubs in Porto Alegre is 18 and enforcement is stringent, which may explain the later onset. This finding is consistent with others obtained from similar samples in the literature (Lomba et al., 2008).

The issue of sexual initiation and sexual risk is important to discuss given the characteristics of the sample we described. Participants who reported early sexual debut had higher prevalence of all categories of substance use compared to those with later sexual debut, especially for cocaine and crack. We hypothesize that early sexual initiation is a risk factor for later cocaine/crack use in our sample, and particularly for women with histories of sexual coercion, which is supported by existing literature (Hyman et al., 2008; Young & Boyd, 2000).

Participants reporting early sexual debut were more likely to report drug use associated with sexual activity, which is found in existing literature with regard to early initiation of sex (Bellis et al., 2008; Stanton, Li, Cottrell, & Kaljee et al., 2001; Wang, Storr, Browne, & Wagner, 2010). In a study developed in eight African countries with adolescents (Peltzer, 2010), for example, the authors reported a high prevalence of early sexual debut. Early sexual debut was correlated with substance use, number of sexual partners, and increased risk of HIV acquisition and transmission, as well as high rates of unprotected sex. As the authors discuss, these risk factors are consistent with Jessor and Jessor's theory of problem behavior (Jessor & Jessor, 1977), which suggests that early sexual relations can be seen as a marker for future development of potentially risky behaviors such as drug use or unprotected sex, or both. This would appear to be a plausible explanation for the patterns of risk behavior in the current sample.

Other aspects of elevated sexual risk were also present in those with early sexual onset. Drugs, gifts or money in exchange for sex was more likely to be reported among early sexual debut respondents, when compared to late sexual initiators. Those with early debut also reported more sexual partners in lifetime, and were more likely to report use of alcohol or drugs to make sex last longer or hurt less. These would appear to be clustered indicators of risk. As has been well described in literature, prolonged sex under the effects of drugs may facilitate the dissemination of HIV (Colfax & Guzman, 2006; Ibañez, et al., 2010) and other sexually-transmitted infections. These data suggest a combination of risks that needs to be studied in further detail in these young, sexually active polydrug users.

An additional finding that requires further investigation is the high prevalence of anal sex encounters among male and female genders. Prevalences found here are much higher than the general population and than other drug-using populations. As reported by Ibañez and colleagues. (2010), there may be a cultural influence on these findings, since in their study with urban club goers of Miami, heterosexual anal sex was more commonly found among Latinos than African-American respondents. Of interest in the current study, there was also a trend toward higher anal sex prevalence among those with early sexual debut relative to later initiators. This may be an additional indicator of higher sexual risk taking related to early experience.

We found no differences with regard to psychiatric manifestations of anxiety and depression according to age of sexual initiation, although a significant portion of our sample reported severe anxiety and depression symptoms, in a much higher rate than the overall population (Lima, 1999). This is consistent with current literature on the topic, which has provided conflicting evidence for the association between early sexual debut and depressive symptomatology (Needham, 2007; Sabia, 2006) and anxiety (Ramrakha et al., 2007). A recent report suggests that depression and early sexual debut could be concomitant outcomes of biopsychosocial processes and not be linked in a direct causal relationship (Jamieson & Wade, 2010). It may be that the heavy poly-drug use of our sample and high prevalence of psychological problems limits our ability to discern an association with sexual debut. This may be an area of interest for future research.

This is the first and preliminary analysis of data obtained from a sample of active club drug users in Porto Alegre, Brazil. Because of its cross-sectional design, this paper is necessarily exploratory, aimed at a preliminary description of the substance use, sexual, and psychological characteristics of our sample. Age of sexual initiation appeared to divide our sample of club users into two different groups, particularly with regard to risky sexual behaviors. Although some of these associations did not reach statistical significance, small sample sizes may have lead to insufficient power. Also, the associations found cannot be deemed causal due to the study design.

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References

Andrade, AG.; Duarte, PC.; de Oliveira, LG. I Levantamento Nacional sobre o uso de álcool, tabaco e outras drogas entre universitários das 27 capitais brasileiras. 2010. Retrieved from http://www.grea.org.br/I_levantamento/I_levantamento_nacional.pdf

Battisti M, Noto A, Nappo S, Carlini EA. A profile of Ecstasy (MDMA) use in São Paulo, Brazil: An ethnographic study. Journal of Psychoactive Drugs. 2006; 38(1):13–18. [PubMed: 16681171]

Bellis M, Hughes K, Calafat A, Juan M, Ramon A, Rodriguez J, Mendes F, Schnitzer S, Phillips-Howard P. Sexual uses of alcohol and drugs and the associated health risks: a cross sectional study of young people in nine European cities. BioMed Central Public Health. 2008; 8:155. [PubMed: 18471281]

Bensley L, Spieker S, Van Eenwyk J, Schoder J. Self-reported abuse history and adolescent problem behaviors. II. Alcohol and drug use. Journal of Adolescent Health. 1999; 24(3):173–180. [PubMed: 10195800]

Breen C, Degenhardt L, Kinner S, Bruno R, Jenkinson R, Matthews A, Newman J. Alcohol use and risk taking among regular ecstasy users. Substance Use & Misuse. 2006; 41(8):1095–1109. [PubMed: 16798678]

Brook D, Brook J, Zhang C, Cohen P, Whiteman M. Drug use and the risk of major depressive disorder, alcohol dependence, and substance use disorders. Archives of General Psychiatry. 2002; 59(11):1039–1044. [PubMed: 12418937]

Chan Y, Passetti L, Garner B, Lloyd J, Dennis M. HIV risk behaviors: Risky sexual activities and needle use among adolescents in substance abuse treatment. AIDS Behavior. 2011; 15(1):114–124.

Coker A, Richter D, Valois R, McKeown R, Garrison C, Vincent M. Correlates and consequences of early initiation of sexual intercourse. Journal of School Health. 1994; 64(9):372–377. [PubMed: 7877279]

Colfax G, Guzman R. Club drugs and HIV infection: a review. Clinical Infectious Diseases. 2006; 42(10):1463–1469. [PubMed: 16619161]

de Almeida S, Silva M. Ecstasy (MDMA): Effects and patterns of use reported by users in São Paulo. Revista Brasileira de Psiquiatrja. 2003; 25(1):11–17.

De Almeida S, Silva M. Characteristics of ecstasy users in Sãio Paulo, Brazil. Substance Use & Misuse. 2005; 40(3):395–404. [PubMed: 15776985]

De Micheli D, Formigoni M. Drug use by Brazilian students: Associations with family, psychosocial, health, demographic and behavioral characteristics. Addiction. 2004; 99(5):570–578. [PubMed: 15078231]

Dennis, ML.; Titus, JC.; White, MK.; Unsicker, JI.; Hodgkins, D. Global Appraisal of Individual Needs—Initial (GAIN-I). 2002. Retrieved from http://www.chestnut.org/LFgain/Gadm1299.pdf

Duncan A, Sartor C, Scherrer J, Grant J, Heath A, Nelson E, Jacob T, Bucholz KK. The association between cannabis abuse and dependence and childhood physical and sexual abuse: evidence from an offspring of twins design. Addiction. 2008; 103(6):990–997. [PubMed: 18482422]

Fendrich M, Wislar J, Johnson T, Hubbell A. A contextual profile of club drug use among adults in Chicago. Addiction. 2003; 98(12):1693–1703. [PubMed: 14651501]

Galduróz J, Noto A, Nappo S, Carlini E. Household survey on drug abuse in Brazil: Study involving the 107 major cities of the country—2001. Addictive Behaviors. 2005; 30(3):545–556. [PubMed: 15718070]

Harrison P, Hoffmann N, Edwall G. Differential drug use patterns among sexually abused adolescent girls in treatment for chemical dependency. International Journal of the Addictions. 1989; 24(6): 499–514. [PubMed: 2599679]

Hayatbakhsh M, Najman J, Bor W, O'Callaghan M, Williams G. Multiple risk factor model predicting cannabis use and use disorders: A longitudinal study. American Journal of Drug and Alcohol Dependence. 2009; 35(6):399–407.

Hyman S, Paliwal P, Chaplin T, Mazure C, Rounsaville B, Sinha R. Severity of childhood trauma is predictive of cocaine relapse outcomes in women but not men. Drug Alcohol Dependence. 2008; 92(1–3):208–216.

Ibañez G, Kurtz S, Surratt H, Inciardi J. Correlates of heterosexual anal intercourse among substance-using club-goers. Archives of Sexual Behavior. 2010; 39(4):959–967. [PubMed: 20217224]

Inciardi J, Surratt H, Kurtz S, Cicero T. Mechanisms of prescription drug diversion among drug-involved club-and street-based populations. Pain Medicine. 2007; 8(2):171–183. [PubMed: 17305688]

Jamieson L, Wade T. Early age of first sexual intercourse and depressive symptomatology among adolescents. Journal of Sexual Research. 2010:1–11.

Jessor, R.; Jessor, SL. Problem behavior and psychosocial development: A longitudinal study of youth. New York: Academic Press; 1977.

Keyes K, Martins S, Hasin D. Past 12-month and lifetime comorbidity and poly-drug use of ecstasy users among young adults in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. Drug & Alcohol Dependence. 2008; 97(1–2):139–149. [PubMed: 18524499]

Klitzman R, Greenberg J, Pollack L, Dolezal C. MDMA ('ecstasy') use, and its association with high risk behaviors, mental health, and other factors among gay/bisexual men in New York City. Drug & Alcohol Dependence. 2002; 66(2):115–125. [PubMed: 11906799]

Kurtz S, Inciardi J, Surratt H, Cottier L. Prescription drug abuse among ecstasy users in Miami. Journal of Addictive Diseases. 2005; 24(4):1–16. [PubMed: 16368653]

Leshner, AI. Hallucinogens and Dissociative Drugs. NIDA Research Report Series 2007. 2001. Retrieved from http://www.drugabuse.gov/PDF/RRHalluc.pdf

Li X, Stanton B, Cottrell L, Burns J, Pack R, Kaljee L. Patterns of initiation of sex and drug-related activities among urban low-income African-American adolescents. J Adolesc Health. 2001; 28(1):46–54. [PubMed: 11137906]

Lima MSD. Epidemiologia e impacto social. Revista Brasileira de Psiquiatria. 1999; 21:01–05.

Lomba L, Apostolo J, Loureiro H, Gravet J, Silva M, Mendes F. Consumos e comportamentos sexuais de risco na noite de Coimbra. Revista Toxicodependencias. 2008; 14(1):10.

Ma Q, Ono-Kihara M, Cong L, Xu G, Pan X, Zamani S, Ravari SM, Zhang D, Homma T, Kihara M. Early initiation of sexual activity: A risk factor for sexually transmitted diseases, HTV infection, and unwanted pregnancy among university students in China. BioMed Central Public Health. 2009; 9:111. [PubMed: 19383171]

McGue M, Iacono W. The association of early adolescent problem behavior with adult psychopathology. American Journal of Psychiatry. 2005; 162(6):1118–1124. [PubMed: 15930060]

Montoya A, Sorrentino R, Lukas S, Price B. Long-term neuropsychiatric consequences of "ecstasy" (MDMA): A review. Harvard Review of Psychiatry. 2002; 10(4):212–220. [PubMed: 12119307]

Needham B. Gender differences in trajectories of depressive symptomatology and substance use during the transition from adolescence to young adulthood. Social Science Medicine. 2007; 65(6):1166–1179. [PubMed: 17574316]

Nelson E, Heath A, Lynskey M, Bucholz K, Madden P, Statham D, Martin NG. Childhood sexual abuse and risks for licit and illicit drug-related outcomes: A twin study. Psychological Medicine. 2006; 36(10):1473–1483. [PubMed: 16854248]

Novoa R, Ompad D, Wu Y, Vlahov D, Galea S. Ecstasy use and its association with sexual behaviors among drug users in New York City. Journal of Community Health. 2005; 30(5):331–343. [PubMed: 16175956]

Ompad D, Ikeda R, Shah N, Fuller C, Bailey S, Morse E, Kerndt P, Maslow C, Wu Y, Vlahov D, Garfein R, Strathdee SA. Childhood sexual abuse and age at initiation of injection drug use. American Journal of Public Health. 2005; 95(4):703–709. [PubMed: 15798133]

Parks K, Kennedy C. Club drugs: Reasons for and consequences of use. Journal of Psychoactive Drugs. 2004; 36(3):295–302. [PubMed: 15559677]

Peltzer K. Early sexual debut and associated factors among in-school adolescents in eight African countries. Acta Paediatrica. 2010; 99(8):1242–1247. [PubMed: 20491706]

Poikolainen K, Tuulio-Henriksson A, Aalto-Setälä T, Marttunen M, Anttila T, Lönnqvist J. Correlates of initiation to cannabis use: A 5-year follow-up of 15–19-year-old adolescents. Drug & Alcohol Dependence. 2001; 62(3):175–180. [PubMed: 11295321]

Ramo D, Grov C, Delucchi K, Kelly B, Parsons J. Typology of club drug use among young adults recruited using time-space sampling. Drug & Alcohol Dependence. 2010; 107(2–3):119–127. [PubMed: 19939585]

Ramrakha S, Bell M, Paul C, Dickson N, Moffitt T, Caspi A. Childhood behavior problems linked to sexual risk taking in young adulthood: A birth cohort study. Journal of the Academy of Child and Adolescent Psychiatry. 2007; 46(10):1272–1279.

Sabia J. Does early adolescent sex cause depressive symptoms? Journal of Policy Analysis and Management. 2006; 25(4):803–825. [PubMed: 16989034]

Sartor C, Lynskey M, Bucholz K, McCutcheon V, Nelson E, Waldron M, Heath AC. Childhood sexual abuse and the course of alcohol dependence development: Findings from a female twin sample. Drug & Alcohol Dependence. 2007; 89(2–3):139–144. [PubMed: 17227698]

Soldera M, Dalgalarrondo P, Corrêa Filho H, Silva C. Use of psychotropics drugs among students: Prevalence and associated social factors. Revista de Saúde Público. 2004; 38(2):277–283.

Stanton B, Li X, Cottrell L, Kaljee L. Early initiation of sex, drug-related risk behaviors, and sensation-seeking among urban, low-income African-American adolescents. Journal of the National Medical Association. 2001; 93(4):129–138. [PubMed: 12653400]

Staton M, Leukefeld C, Logan T, Zimmerman R, Lynam D, Milich R, Martin C, McClanahan K, Clayton R. Risky sex behavior and substance use among young adults. Health & Social Work. 1999; 24(2):147–154. [PubMed: 10340165]

United Nations Office on Drugs and Crime (UNODC). World drug report. 2008. Retrieved from http://www.unodc.org/documents/wdr/WDR_2008/WDR_2008_eng_web.pdf

Volkow, ND. MDMA (Ecstasy) Abuse. NIDA Research Report Series 2007. 2006. Retrieved from http://www.drugabuse.gov/PDF/RRmdma.pdf

Wang Y, Storr C, Browne D, Wagner F. Early sexual experience and later onset of illegal drug use among African American students on HBCU campuses. Substance Use & Misuse. 2010

Young A, Boyd C. Sexual trauma, substance abuse, and treatment success in a sample of African American women who smoke crack cocaine. Substance Abuse. 2000; 21(1):9–19. [PubMed: 12466644]

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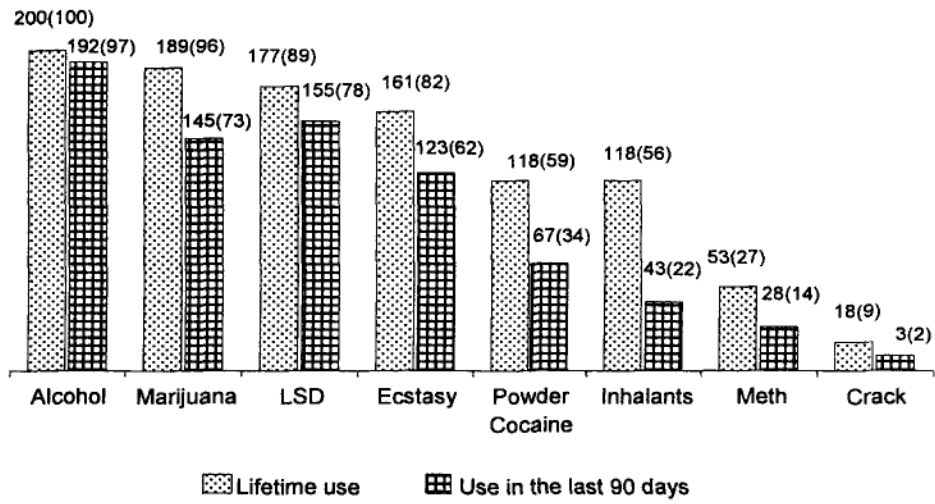
Figure 1.
Lifetime and 90-Day Use of Drugs Reported by Subjects (N%)

Table 1

Sample Demographics Stratified According to Age of Sexual Initiation

Variables		N (%) n=200	<=14	>14	P
Sex	Male, n= 139	139 (69.5)	64 (46.0)	75 (54.0)	0.07
	Female, n=61	61 (30.5)	19 (31.1)	42 (69.9)	
Years of schooling	Up to 8 years (elementary school) n=16	16 (8.0)	11 (68.8)	5 (31.2)	0.06
	Up to 11 years (middle or Junior high school n=144	143 (71.9)	58 (40.3)	85 (59.7)	
	Up to at least 14 years (high school) n=40	40 (20.1)	14 (35.0)	26 (65.0)	
Occupational status	Student and Employed n=40	40 (20)	11 (27.5)	29 (72.5)	0.26
	Student n=64	64 (32)	29 (45.3)	35 (54.7)	
	Employed n=83	83 (41.5)	37 (44.6)	46 (55.4)	
	Other (no study or no work) n=13	13 (6.5)	6 (46.2)	7 (53.8)	
Monthly individual income	No income n=36	35 (17.5)	19 (52.8)	17 (47.2)	0.29
	Up to 3 monthly minimum wages* n= 123	123 (61.5)	47 (38.2)	76 (61.8)	
	More than 3 monthly minimum wages n=41	42 (21.0)	17 (41.5)	24 (58.5)	

*
equivalent to R$ 1,020,00 in Brazil, or U$ 602 (U$ 1 = R$ 1,69)

Table 2

Selected Sexual Behaviors Stratified According to Sexual Initiation

Variables	N(%)	<=14 n=83	>14 n=117	P	Crude PR (CI 95%)	Adjusted PR* (CI 95%)
Had sex while you or your partner was high on alcohol or drugs	157(78.5)	74(89.2)	83(70.9)	0.04	1.3 (1.0–1.4)	1.3 (1.1–1.5)
Had sex involving anal intercourse	82(41)	40(48.2)	42(35.9)	0.11	1.3 (1.0–1.9)	1.3 (0.9–1.8)
Had sex with a man who might had had sex with other men	36(18)	17(20.5)	19(16.2)	0.56	1.3 (0.7–2.3)	1.1 (0.6–2.0)
Sex trading	34(17.0)	23(27.7)	11 (9.4)	0.01	2.9 (1.5–5.7)	2.2 (1.2–4.3)
Had two or more sexual partners	125(62.5)	61(73.5)	64(54.7)	0.01	1.3 (1.1–1.7)	1.3 (1.1–1.6)
Had sex without using any kind of condom, dental dam or other barrier to protect you and your partner from diseases or pregnancy	133(66.5)	58(69.9)	75(64.1)	0.48	1.1 (0.9–1.3)	1.1 (0.9–1.3)

*
Sexual behaviors during the past 12 months

**
Categorical variables described by the *n* (%) and compared by the Test of Chi-square with Yates correction or Fisher's Exact Test. Adjusted for gender and schooling

Table 3

Lifetime Substance Use Reported by Age of Sexual Initiation

Variables	<=14 n=83 N(%)	>14 n=117 N(%)	P	Crude PR (CI 95%)	Adjusted PR (CI 95%)
Prescribed medication for non therapeutic reasons	18(22.2)	19(16.5)	0.41	1.3(0.8–2.4)	1.5(0.8–2.6)
Alcohol	82(100)	116(99.1)	0.58	1.0(1.0–1.1)	1.0(0.9–1.1)
Marijuana	81(98.8)	108(93.1)	0.05	1.1(1.0–1.1)	1.1(1.0–1.1)
Inhalants	54(65.9)	64(55.2)	0.17	1.2(1.0–1.5)	1.2(1.0–1.5)
Mushrooms	19(23.2)	20(17.1)	0.37	1.4(0.8–2.4)	1.6(0.9–2.9)
Methamphetamine	24(29.3)	29(25)	0.61	1.2(0.7–1.9)	1.3(0.8–2.1)
Powder cocaine/crack	57(69.5)	62(53.0)	0.02	1.3(1.1–1.6)	1.3(1.0–1.6)

*
Categorical variables described by the *n* (%) and compared by the test of Chi-square with Yates correction or Fisher's Exact Test. Adjust for gender and schooling.