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Factors Associated with Intent to Use Condoms to Prevent Sexual Transmitted Infections (STIs) among African American Female Juvenile Detainees that Use 3, 4-Methylenedioxymethamphetamine (MDMA or 'Ecstasy')

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Abstract

The aim of the present study is to examine self-reported condom use and practices in a sample of African American female juvenile detainees in Georgia who self-report a history of 3, 4-methylenedioxymethamphetamine (MDMA or 'Ecstasy') use. Subjects for this investigation were 764 African American females drawn from an overall sample of 2260 juvenile offenders housed at selected Youth Development Campuses (YDCs) across the state of Georgia. Individual regression models indicate that the best predictor variables for condom use included how many days participants reported drinking alcohol the last month prior incarceration (β = −0.090; P = 0.001) and how often respondents reported drinking five or more drinks the last month before incarceration (β = −0.088; P = 0.03).

Introduction

In the United States, a significant proportion of sexually transmitted infections (STIs) among adolescents occurs between heterosexual females [1]. Unfortunately rates of sexually transmissible infections (STIs) including HIV among female adolescents remains consistently higher for African Americans than among other racial/ethnic groups [1,2]. Nearly seventy percent of HIV diagnosed adolescent females ages 15-19 were African American, making this group extremely over-represented in regards to overall STI morbidity [3]. Moreover, African American female adolescents account for 73% of reported gonorrhea cases and 52% of chlamydia cases among females ages 15-19, which as research has demonstrated, serves to dramatically increases ones risk of acquiring HIV [4,5].

Several behaviors have been shown to be predictive of STI occurrence among adolescent offenders including, but not limited to substance use, and not using condoms [6-13]. Drug use in particular is noted to be a contributor to high rates of STIs among African American female adolescents is drug use behavior [14-16]. One drug of particular interest presently is 3, 4-methylenedioxymethamphetamine (MDMA). Known by its street name, ecstasy, MDMA popularity is due to the users energy-stimulating effects and perceived euphoric [17]. Research also shows that adolescents that report higher rates of lifetime Ecstasy use display higher levels of risky behaviors related psychopathology that may impact other health-protective practices [18,19]. Therefore, reducing risk of the contracting STIs such as condom use is not considered [20-25].

Other factors that influence condom use behavior among female adolescents include condom-use, communication self-efficacy, relationship intimacy and power/control in relationships [26-30]. However, little is known on how the use of 3, 4-methylenedioxymethamphetamine (MDMA or 'Ecstasy') has a bearing on condom use practices of African American female adolescents. Specifically factors associated with condom use may be, distinctively connected with having a history of incarceration during adolescents. Moreover, studies that have examined samples of adolescent females were not specifically focused on adolescent African American female offenders and it is well documented that condom use remains extremely low among African-American adolescent females. A parameter is shown to be less likely to use condoms during sexual intercourse [31].

Based on the aforementioned, the importance of conducting research aimed at understanding factors that influence STI sexual risk behaviors among juvenile female offenders within the populations, having unprotected sex of such an ethnic and racial specific groups is needed so that effective, culturally sensitive interventions to reduce STI risk among can be designed and implemented. Moreover, African American female juvenile adolescents sexual risk taking has been frequently associated with substance use which makes this population of considerable interest since the consumption of drugs like ecstasy have been shown to increase risk taking behaviors in general [32,33]. With this in mind our study attempts to discern the linkage if any, between the consumption of ecstasy among a sample of African American female juvenile detainees and self-reported condom usage. Thus the aim of the present study is to examine self-reported condom use beliefs and practices

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in a sample of African American female juvenile detainees in Georgia who self-report a history of 3, 4-methylenedioxymethamphetamine (MDMA or 'Ecstasy') use.

Methods

Subjects for this investigation were 764 African American females drawn from an overall sample of 2260 juvenile offenders housed at selected Youth Development Campuses (YDCs) across the state of Georgia. Health Educators approached prospective participants within the first three days of being admitted into the facilities, presented them with an overview of the study, and asked them to participate. Adolescents who agreed to take part in the study signed an assent form that gave members of the research team permission to contact their parents and/or legal guardian for their approval for participation. Prior to study implementation, approval was obtained from the university and the Department of Juvenile Justice Institutional Review Boards. Of the 764 African American female offenders in the sample, this effort examines data from 120 that indicated a past history of ecstasy use prior incarceration.

Measures

Demographic variables

Participants reported their age, years of formal education, and prior arrest history.

Condom use

A single item from the interview instrument was used to surmise a holistic perspective of participant's views about condoms and serve as the targeted dependent variable for this study: When leaving the YDC, how likely do you think you will "Use a condom or request your partner use them every time you have sex." This item was measured using a scale from 1 to 5 (1 = not likely at all, 2 = somewhat likely, 3 = likely 4 = very likely and 5 = definitely).

Ecstasy use

This was measured using a single item from the drug use measures included in the survey instrument measured on scale from 0 to 5 (0 = never, 1 = 1–2 days, 2 = 3–5 days, 3 = 6–9 days, 4 = 10–19 days and 5 = 20–31 days). These response categories were recoded to compute a dichotomous variable of 1 = never and 2 = prior uses. Specifically, items asked during the last month before entering a detention center or YDC, how often have you used any of the following on your own that is, without a doctor telling you to take them.

Alcohol use

Four items were employed to provide multiple indices for self-reported alcohol use. The first was an opened ended interval/ratio scaled item that asked, "How old were you when you had your first drink?" Individuals who responded to this item were asked three subsequent questions: "During your life time how many times have you had at least one drink of alcohol (measured on scale from 1 to 6 (1 = 1 or 2 times, 2 = 3 to 9 times, 3 = 10 to 19 times, 4 = 20 to 39 times, 5 = 40 to 99 times and 6 = 100 or more times); On how many days did you drink alcohol on the last month, before entering the YDC or detention center (measured on scale from 1 to 6 (1 = none, 2 = 1 or 2 days in the last month, 3 = 3 to 5 days in the last month, 4 = 6 to 9 days in the last month, 5 = 10 to 19 days in the last month and 6 = 20 to 31 days in the last month); and "In the last month before entering the YDC or detention center, how often did you have 5 or more drinks in the same day" (measured on scale from 1 to 5 (1 = 1 or 2 days in the last month, 2 = 3 to 5 days in the last month, 3 = 6 to 9 days in the last month, 4 = 10 to 19 days in the last month and 5 = 20 to 31 days in the last month) Participants with missing data were not included in the analysis.

Marijuana use

Two items were used to provide a measure for self-reported marijuana use. The first was an opened ended interval/ratio scaled item that asked, "How old were you when you first used marijuana?" and Individuals who responded to this item were asked three subsequent questions: "During your life time how many times have you used marijuana (measured on scale from 1 to 6 (1 = 1 or 2 times, 2 = 3 to 9 times, 3 = 10 to 19 times, 4 = 20 to 39 times, 5 = 40 to 99 times and 6 = 100 or more times).

Sexual activity

Four items were used as predictor variables to represent the construct of sexually activity. These items were: Age first willingly had vaginal sex, number of Lifetime sexual partners, number of partners last year prior incarceration, Age first willingly performed oral sex, age first willingly had anal sex, number of partners last month prior incarceration. All items were open ended and measured on an interval/ratio scale.

Sexual risk behaviors

Four items were used as predictor variables to represent the construct of sexual risk behaviors. These items were: Occasions used alcohol before sex without a condom, occasion's partner used alcohol before sex without a condom, occasions used marijuana before sex without a condom and occasion's partner used marijuana before sex without a condom. All items were open ended and measured on an interval/ratio scale.

Statistical analysis

Descriptive statistics and linear regression models for were calculated using SPSS 16.0 software. Relationships between self-reported condom use and other variables including demographics, substance use and sexual risk behaviors were examined using linear regression models. Demographics and other potential covariates were transformed by $\log_e(x+1)$ if not normally distributed. All findings are reported based on the original distribution with all test statistics based on normalized data with specified self-reported condom use as an outcome with selected predictor variables. All measures were entered independently into the estimated equations. This statistical tool was selected based on the assumptions that data used are continuous variables with multivariate normal distributions. Each of the selected self-reported condom use and belief behavior items were used as a criterion variable, with level of alcohol consumption serving as the predictor variable. This procedure was guided by previously applied methods in behavioral research [34]. All measures were mean-centered to reduce multi collinearity and were entered independently into the estimated equations.

Non-normality was assessed by using the Mardia's test for multivariate normality [35]. The resulting multivariate index was not significant thus confirming statistical evidence of a normal distribution. All data are reported as means for continuous variables with $P < 0.05$ considered statistically significant. Participants with missing data were not included in the analysis.

Results

The mean age of study participants was 15.13 years (SD = 1.08) who had reported having been 13.35 years of age (SD = 1.41, n = 111) the first time they willing had vaginal sex. Respondents reported having nearly eight lifetime sexual partners (Mean = 7.67, SD = 19.32) with approximately 48.6% (n = 371) reporting being locked up prior to the current incarceration. The average education in terms of grade completion was the 8th grade (SD = 1.3). The mean age for participants age of first using alcohol and Marijuana was 13.29 (SD = 1.34) and 12.8 (SD = 2.25) years accordingly. Overall, participants reported having 2.29 (SD = 2.68) tattoos and that they first willing had vaginal sex at age 13.5 (SD = 1.34) years of age.

As shown in Table 1, the demographic predictor variables of age, days incarcerated and highest grade of school completed were not significantly associated with intentions to use condoms. Individual regression models indicate that the best predictor variables for condom use included how many days participants reported drinking alcohol the last month prior incarceration ($\beta = -0.090$; $P = 0.001$) and how often respondents reported drinking five or more drinks the last month before incarceration ($\beta = -0.088$; $P = 0.03$).

Variables		Beta	SE	r^2	T	P
Demographic	Age	0.025	0.092	0.001	0.27	0.78
	Days Incarcerated	0.050	0.007	0.002	0.53	0.59
	Highest Grade of School Finished	0.080	0.080	0.006	0.86	0.38
Alcohol Use						
	Age 1st Drink of Alcohol	0.044	0.060	0.002	0.43	0.62
	Lifetime, how many times had at least one drink	0.020	0.070	0.001	0.19	0.84
	How many days drank alcohol the last month before incarceration	-0.090	0.018	0.008	-3.74	0.001
	Last month before incarceration, how often did you have 5 or more drinks in the same day	-0.088	0.041	0.008	-2.09	0.03
Marijuana Use						
	Age first used Marijuana	0.106	0.073	0.011	1.06	0.29
	Lifetime, how many times used Marijuana	-0.099	0.060	0.010	-0.98	0.32
Sexual Activity						
	Age first willingly had vaginal sex	0.121	0.073	0.015	1.27	0.21
	Number of Lifetime sexual partners	0.033	0.005	0.001	0.34	0.73
	Number of partners last year prior incarceration	0.078	0.014	0.001	0.81	0.42
	Number of partners last month prior incarceration	-0.181	0.010	0.003	-1.78	0.07
	Age 1st willing performed oral sex	-0.271	0.266	0.074	-1.22	0.23
	Age 1st willing had anal sex	-0.322	1.32	0.104	-0.48	0.67
Sexual Risk Behaviors						
	Occasions used alcohol before sex wo condom	-0.409	0.038	0.167	-4.08	0.001
	Occasions partner used alcohol before sex wo condom	-0.354	0.036	0.125	-3.42	0.001
	Occasions used marijuana before sex wo condom	-0.258	0.020	0.067	-2.41	0.02
	Occasions partner used marijuana before sex wo condom	-0.143	0.014	0.020	-1.31	0.19

Table 1: Results of Linear Regression Models with Using a condom or request your partner use them every time you have sex as Dependent Variable.

Either age first used marijuana (P < 0.29) or self-reported lifetime uses of marijuana (P < 0.32) were demonstrated to be predictive of intent to use condoms. Likewise, the sex risk behaviors of age first willing had vaginal sex (p < 0.21), number of life time sexual partners (P < 0.73) and the number of partners during the last year prior incarceration (P < 0.42) did not predict study participants intent to use condoms. However, number of partners last month prior incarceration did approach statistical significance (P < 0.07). Results of our investigation do support that the occasions respondents reported consuming alcohol prior to having sex without a condom, was inversely related to the intent to use a condom and a statistically significant predictor of this outcome (β = -0.409; P < 0.001). This was also the observed with regards to occasions their partners used alcohol before having sex without a condom (β = -0.354; P < 0.001).

Although the occasions study participants used marijuana before having sex was shown to be a statically significant factor in and inversely proportional to intent to condom use intent (β = -0.258; P < 0.02), occasions their partners used marijuana before having sex without a condom was noted not to be significant (P < 0.19).

Discussion

The primary objective of this investigation was to study the extent to which selected STI risk taking behaviors and condom use beliefs in a sample of African American female adolescent detainees is associated with a self-reported history of ecstasy use prior incarceration. This investigation is important given that according to the Centers for Disease Control and Prevention and other researchers that sexually transmitted infections (STIs) are on the rise among African American adolescent females aged 15 to 24 years while other adolescent parameters are in a downward trend [36-38].

This is one of the first studies to empirically examine the association between sexual risk taking practices associated with beliefs about condoms in sample comprised of African American female adolescent offenders that report a history of Ecstasy use. Findings detail that sample participants that displayed binge drinking behaviors in the form of consuming higher levels of alcohol the last month before incarceration and consuming more than five drinks in one day prior incarceration reported lower likelihood of using condoms. Study respondents also showed statistically significant lower condom use rates when they drank alcohol prior to sexual intercourse and when their partners drank alcohol before sex if they reported a history of Ecstasy use. Marijuana use before sex was also inversely related to increased reports of using condoms.

These findings indicate that whereas the main effect of heavy alcohol use on consistent condom use desires diminished over time, it did not vary by any of the demographic variables examined (Age, days incarcerated or highest grade of school finished). This may suggest that alcohol use in concert with ecstasy increase the chances of reduced condom use among African American adolescent offenders.

Although increased risk behaviors based on several factors associated with alcohol use for African American adolescent female offenders with a self-reported history of consuming Ecstasy were observed in this investigation, it remains difficult to discern if these are due to the female participant or the actions of partners in particular given that inconsistent condom use is exacerbated by substance use, serving to elevate risk for the contracting of STIs in young adulthood. Moreover, research supports the contention that

individual's intentions to use condoms and females' expectancy beliefs about condom use are often associated with consistent condom use, and expectancy beliefs about partners' sentiments regarding condoms [39]. These types of behaviors may be due to network dynamics that participants may experience both while incarcerated and outside in the community with partners [40]. For example, it has been shown that in many communities, the gender ratio imbalance is often an influential factor in condom use behavior among segments of the African American community since it results in men have multiple female sexual partners over the same time period and women frequently complying with men's condom use preferences regardless of what they believe about condom use [41].

Overall, this investigation extends previous STI research by using regionally representative sample of African American female adolescent offenders based on reported past use of MDMA, to elucidate unique patterns of sexual risk behaviors in an effort to offer unique insight into how patterns of sexual behaviors manifest to influence risk singularly within this population. This clearly moves beyond traditional studies examining condom use behavior among adolescent female populations.

Even based on the aforementioned, our study has several limitations. Although findings support for more detailed preventive interventions, there may be some issues based on the sample number of study participants that met the criteria for inclusion. Thus, it is important to interpret our findings in the context of the guiding steps for effect size calculation. An additional limitation was that this study was retrospective in design and cannot benefit from the methods that allow for the examination of behavior as it unfolds over time because retrospective summaries of occurrences of sexual risk practices and personal accounts of the role of substance use in those occurrences may be subject to attributional biases [42]. A final limitation was that our study was not designed to distinguish amongst the various causal mechanisms that may explain co-variation between condom use and the specified sexual risk practice behaviors examined. Especially, given the observed significant interaction effects of alcohol consumption on condom use by study participants. This may indicate that prevention programs that successfully reduce alcohol use during adolescence may also engender higher and more consistent levels of condom use among African American young female offenders that use ecstasy, as well as reduce the potential of other health outcomes since adolescent users of Ecstasy under 18 years of age are considered to be more vulnerable to its potential neurotoxic effects [43-47].

In conclusion, health and pediatric psychologists that work in correctional environments that serve adolescents, in particular African American females with a history of substance use, need to play an essential part in the prevention of both STIs and problem behaviors affiliated with substance use, especially ecstasy and alcohol. This can be accomplished by tailoring and designing cultural and gender based interventions to provide both screening, direct risk-reduction and counseling services since adolescent juvenile offenders is a captive audience. Not to mention, servicing additional needs by being in a position to offer referrals for other psychopathology that may be a result of both incarceration and substance use, since a sizable number of incarcerated adolescents evince psychological antecedents including but not limited to depression.

It would also be prudent for future investigations to verify the findings herein and discern if these observations are consistent with African American female adolescent offenders without a history of ecstasy use and the general population of female adolescents, in addition to ethnic specific parameters of this population (e.g. whites and Hispanic). Regardless, they should be employed to guide the development of both facility and community-based interventions.

These programs may include efforts that target the developmental antecedents of alcohol use and ecstasy use since incarcerated youth are a captive audience and protective factors that have been identified in previous studies include family structure, parental drug use, and parenting practices, as well as child sensation seeking [48]. Moreover, educational prevention efforts should explicitly seek to reduce alcohol and ecstasy use in particular, and address the negative cognitive and emotional effects of incessant substance use in relation to increasing one risk of contracting a STI such as HIV.

Overall, our study contributes new evidence for servicing the behavioral health and STI risk reduction needs of African American female adolescent offenders and findings suggest that behavioral interventions addressing culture- and gender-specific materials and offering opportunities for practicing condom use and negotiation skills remain an extremely efficacious approach for STI risk reduction and prevention for this population. Still, more investigative efforts should focus on the potential contribution of prevention strategies that attend to community-level and structural-level factors affecting increasing consistent condom use, as well as reducing ecstasy and alcohol consumption, especially prior to having sex for African American female's adolescents, particularly ones with a history of past incarceration.

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