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Multiple Risk Behaviors among Youth Living with HIV (YLH) in Five US Cities

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Abstract

Purpose—To describe multiple risk behaviors (substance use, sexual risk, and medication adherence) in a multi-site sample of youth living with HIV (YLH) in five US cities.

Methods—Youth (N=352) were recruited from four Adolescent Trials Network (ATN) sites (Philadelphia, Fort Lauderdale, Baltimore, and Los Angeles) and one non-ATN site in Detroit and screened for multiple problem behaviors for an intervention study. A substance abuse problem was determined with the CRAFFT, a 6-item adolescent screener. Single items were used to screen for current sexual risk and for an HIV medication adherence problem. Two hundred and thirty nine (68%) has at least one of the three risk behavior problems based on the screener. One-hundred and eighty six (52.8 %) completed longer, in-depth questionnaires for each problem behavior.

Results—Of the 352 youth screened, 60% had problem level substance use and 42% had a sexual risk problem. Ninety-one (55%) of the 165 (47%) who were prescribed medications reported an adherence problem. One-hundred twelve (32%) reported no problem behavior, 123 (35%) reported 1 problem behavior, 95 (27%) reported 2 problem behaviors, and 20 (6%) reported 3 problem behaviors. Males were more likely to have a substance use problem. Younger YLH and those perinatally infected were more likely to have an adherence problem. Among the 186 (52.8%) completing longer measures, those with a substance abuse problem had higher substance use on a timeline follow-back procedure than those without. Those who screened positive for a sexual risk problem reported more unprotected sex on an in-depth interview than those without. Those who screened positive for an adherence problem had higher viral loads than those without an adherence problem.

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Conclusions—Results suggest high rates of problem behaviors among youth living with HIV, particularly in older youth. Younger and perinatally infected youth may require specialized adherence interventions. Associations between the screener and more in-depth assessment measures suggest potential clinical utility of screening youth for high risk behaviors.

Keywords

Youth living with HIV (YLH); Substance Use; Sexual Risk; Adherence Problem

INTRODUCTION

The primary route of transmission of HIV among youth continues to be high-risk sexual activity. Youth living with HIV (YLH) report a higher prevalence of sexual risk behaviors than uninfected youth in the United States [1,2,3,4]. The abuse of alcohol and other drugs contributes to sexual risk by decreasing impulse control [5]. Substance use appears to be highly prevalent among YLH [2,3] thus increasing the risk of HIV transmission. Finally, difficulties with adherence to antiretroviral therapy for HIV positive youth are well known [2]. Poor HIV medication adherence results in high viral loads, therefore increasing the risk of transmission during high-risk sexual activities.

Risk behaviors cluster in adolescence and young adulthood. They cluster, in part, because different risk behaviors originate from social, psychological, or developmental milestones for adolescents covering individuation, need for acceptance from peers, and resolution of sexual identity issues [6]. Park and colleagues [7] reported that the health issues of young adults mirror adolescence; however, they do much worse because those young adults who engage in high-risk activity are usually uninsured, low-income, and lack adult mentoring and supervision. According to the National Institute on Drug Abuse [8], substance abuse peaks in the young adult years and is especially high among males. Prolonged transition to adult roles and responsibilities and little or no safety net that supports adolescents are two contextual factors that shape young adult health [7]. Park [7] and colleagues found that mortality rates more than double between adolescence and young adulthood and that the prevalence of many health problems peak during the early twenties.

The identification of risk behaviors in adolescent and young adult patients has been strongly encouraged in primary health care clinics in general [9]. In HIV care clinics, the assessment of sexual risk behaviors, substance use and medication adherence is considered the standard of care [10]. To date, there has been no published study of these three behaviors simultaneously in a multi-site sample of youth living with HIV in the United States. The purpose of this paper is to describe the multiple risk behaviors among youth living with HIV in the US and better understand the association between risk behavior, age, gender, and sexual identity.

METHODS

The study utilizes screening and baseline data from a multisite randomized clinical trial examining the efficacy of a motivational intervention in reducing risk. Youth were recruited from four Adolescent Trials Network (ATN) sites located in Fort Lauderdale, Philadelphia, Baltimore, and Los Angeles, and one non-ATN site located in Detroit. All five adolescent medicine clinics offered multidisciplinary care including social work, case management, and access to mental health services. Youth with an active thought disorder were excluded due to an inability to complete questionnaires. Those who were currently involved in a formal drug treatment program were excluded from the study. Each site's Institutional Review Board approved the protocol and a certificate of confidentiality was obtained from the National Institutes of Health. Participants were approached at the time of a regularly scheduled clinic

visit or at supportive activities. Providers explained the study to potential participants. If interested, a research assistant obtained verbal consent for screening. Youth were assured that their responses would be kept confidential from members of the HIV clinic team.

At the 5 sites, 352 youth completed an adolescent medicine screener for substance use, sexual risk, and medication non-adherence, and only 10 refused. A subset of these youth, (N = 186) were eligible for the intervention study (those with at least one problem level behavior and one engaged behavior - had sex, ever took HIV medications, tried alcohol or illicit drugs), and completed baseline questionnaires of longer measures of substance abuse and sexual risk as well as completed blood draws for viral load within 30 days of the screener. Written informed consent was obtained from these 186 participants, and a waiver of parental consent was permitted for youth under age 18. For these participants, research interviewers used a computer assisted personal interviewing (CAPI) method on a desktop or portable computer via an internet- based application. Responses to CAPI questions were entered into the computer by the research interviewer in a confidential manner. Once entered, all responses were anonymous and no personal identifying information was recorded during the computer session. These participants received \$30 compensation.

MEASURES

Screener: (Figure 1). YLH were screened for problem level substance use behavior with the CRAFFT (Car, Relax, Alone, Forget, Friends, and Trouble) [11], a 6-item adolescent screener that combines items from 3 existing screening measures. In the original CRAFFT, two or more yes responses indicate problem level substance use. To ensure that substance problems were current, 3 items were changed from “ever used” to used in the last 3 months, used substances to relax, used substances by yourself, and forgetting while using. In order for youth to be considered having a current substance use problem they had to respond “yes” to the question have you ever tried drugs or alcohol? plus “yes” to one of the six follow-up questions on the screener. A single item determined screening for current sexual risk behavior where YLH endorsed the presence or absence of an unprotected intercourse act in the previous three months. A single item determined screening for a medication adherence problem where YLH endorsed whether or not they were less than 90% adherent in the last month. If they were prescribed medications but had refused them, this was considered less than 90% adherent. The screener also included gender, age, and mode of HIV infection.

Comprehensive Baseline Assessments. Three questionnaires were completed by the subset of youth (N = 186) in the intervention trial. Youth completed the Alcohol, Smoking and Substance Involvement Screening Test [12]. This measure was developed for the World Health Organization (WHO) to detect psychoactive substance use and related problems in primary care patients across multiple cultures. Individuals responded to 8 items assessing the frequency and consequences of substance use for the past three months. The measure yields three cut-off scores indicating treatment needs from low risk to moderate risk to high risk. The authors have reported good psychometric properties, and further validity studies are underway. The measure takes about 15 minutes to complete. Actual alcohol and illicit drug use in the past 30 days was assessed using the Timeline Follow-Back Procedure (TLFB). A calendar assists participants in recalling when they used a particular substance and the amount used on each occasion. The TLFB procedure has demonstrated excellent psychometric properties in a number of studies [13] including correlation with urine drug screens [14]. The measure takes up to 30 minutes to complete depending upon the level of substance use.

The Sexual Risk Behavior Scale was modeled after the work of Jemmott and colleagues [15] and takes about 30 minutes to complete. Youth were asked about sexual encounters over the past 3 months including type of sexual acts with biological males or females (oral, anal, vaginal), whether or not a condom was used for each act, and whether the partner's HIV status

was positive, negative, or unknown. Total number of intercourse acts (vaginal or anal) without a condom was utilized in analyses. Viral load is the primary health outcome linked to adherence to antiretroviral medications [16].

Viral load was obtained by a CLIA certified local Clinical Virology Laboratory. If viral load had been obtained in the previous month as part of clinical care, the result was gleaned from medical records and utilized instead of a new blood draw. CD4 T-cell counts were obtained from medical record abstraction from the past three months. If no CD4 count was done in the past three months, blood was drawn at that visit. Ethnicity and sexual orientation were also included in this assessment.

Data Analysis Plan—First, descriptive statistics were used to describe the sample of youth who received the screener questionnaire ($N = 352$). Univariate frequency distributions and means with standard deviations were used to describe categorical and continuous variables, respectively. Chi-square and t-test analyses were used to test for differences in problem behaviors based on demographic characteristics. The demographic characteristics of those who enrolled in the intervention study and completed further questionnaires ($N = 186$) were compared to those who were not enrolled ($N = 166$). To make sure that youth who screened positive for one behavior were in fact higher on that behavior compared to the other high risk youth with different problems, the longer measures were also analyzed. For those who completed the longer measures, t-tests compared scores on the longer measure between those with a problem in one behavior to those without. For example, scores on the Timeline Follow Back were compared between those with a substance use problem and those without a substance use problem (i.e., those with a different inclusion problem such as adherence or sexual risk within the 186 youth). Statistical analyses were performed using SPSS 15.0. Data screening was conducting prior to all analyses. Missing data was excluded from analysis.

RESULTS

Demographic Characteristic and Descriptive Statistics for Full Sample

Demographics for the full sample can be seen in Table 1. Of the 352 youth screened, 204 (58%) were male and 148 (42%) were female. The mean age was 20.36 ($SD = 2.46$). Sixty respondents (17%) reported they were born with HIV, while 281 (80%) reported behaviorally contracting HIV (11 participants were missing this data). Two hundred and seventy-five youth had complete data on substance use and, of those, 165 (60%) reported problem level substance use. Two hundred and eighty-three youth had complete data on condom use and of those, 119 (42%) reported unprotected sex. One hundred and sixty-five (47%) were prescribed medications, and of those, 91 (55%) reported an adherence problem (26% of the whole sample). Chi-square and t-test analyses were used to test for differences in problem behaviors based on demographic characteristics. The presence of a substance use problem was significantly associated with gender, $X^2 (1, N=275) = 8.47, p < .01$, and with perinatal HIV status, $X^2 (1, N=274) = 4.96, p < .05$. Males and those who were behaviorally infected were more likely to have a substance use problem. Having a sex risk problem was unrelated to sample demographics. Presence of an adherence problem was significantly associated with age, $t (163) = 2.32, p < .05$, and perinatal HIV status, $X^2 (1, N=165) = 6.43, p < .05$. Younger respondents and those born with HIV were more likely to report an adherence problem than older and behaviorally infected youth.

Of the 352 initially screened, 239 had an identified problem (68%), while 133 reported no problem behavior (32%). Of the 352, 123 (35%) reported one problem behavior, 96 (27%) reported two problem behaviors, and 20 (6%) reported three problem behaviors. Of those with a sexual risk problem, 69% also had a substance use problem, which was significantly greater than for those who did not have a sexual risk problem (54%), $X^2 (1, N=266) = 5.50, p < .05$.

Of those with an adherence problem, 59% also had a substance use problem. However, there was no significant relationship between having an adherence problem and also having a substance use problem. Older youth were more likely to have multiple problem behaviors, $r(347) = .14, p < .05$. Gender and perinatal infection were not associated with number of problem behaviors.

Analyses for Youth Enrolled in the Full Study

From the 352 youth screened in the current study, 186 (52.8%) were eligible for intervention and therefore completed the additional, longer baseline measures. The 186 youth who completed these measures were not significantly different in demographic variables than those who did not. Of the 186 participants, 155 were African American (83%), 21 were Hispanic (11%), six were Caucasian (3%), and four identified themselves as other (2%). Four outliers were found for the risky sexual acts variable and these scores were winsorized. In order to reduce skewness, alcohol use, marijuana use and viral load variables were log transformed. Means and standard deviations for these variables by screener group and t-test results can be found in Table 2. T-tests were conducted on log-transformed variables, and revealed that those who were scored as having a substance use problem on the screener reported significantly greater use on substance use variables. Those individuals categorized as having a risky sexual behavior problem on the screener endorsed significantly more intercourse acts without a condom. A subset of these youth were prescribed medications ($n = 105$). Those who were categorized as having an adherence problem on the screener had significantly higher viral loads than those who did not.

Within the 186 youth, classification of substance use through the screener (yes/no) was also related to ASSIST cutoff scores for alcohol and marijuana use, the most commonly used substances in the sample. A two by three Chi-square analysis was performed for screener problem (yes/no) by three-category ASSIST (low, moderate, high risk). For alcohol use, those categorized as having no drug problem on the screener were more likely to be in the low-risk ASSIST group (82%) as compared to those who were categorized as having a problem on the screener (54% in low-risk group), $X^2(2, N=173) = 12.85, p < .01$. For marijuana use, those categorized as having no drug problem on the screener were more likely to be in the low-risk ASSIST group (69%) as compared to those who were categorized as having a problem on the screener (33% in low-risk group), $X^2(2, N=173) = 19.61, p < .01$. By using a brief screener, risk behaviors were identified in adolescents and young adults with HIV.

DISCUSSION

The CDC (June, 2007) has reported that nearly 40% of the persons living with HIV/AIDS as of the 2005 national statistics were older youth/young adults between the ages of 20 and 29 years. The Office of National AIDS Policy (2000) estimates half of new HIV infections occur in youth under the age of 25. The results of this study provide important information about problem behaviors in this population. The screener indicated that over half of the youth in this study had problem level substance use and reported unprotected sex. In addition, among those youth who were prescribed medications, over half reported an adherence problem. The results of this multisite study report overlapping problem behaviors among YLH. The most common risk behavior in this sample of YLH was substance abuse. Interventions are clearly needed to address these overlapping problem behaviors, and substance use must be addressed in adherence and HIV prevention interventions. Males were more likely to have substance use problems. Though sexual orientation was not associated with risk, most males were sexual minorities.

Problem level adherence on the screener was associated with viral load. Substance use and sexual risk behavior on the screener was associated with more in-depth questionnaires. These

data suggest the promise of the screener for quick identification of problem behaviors, which is of great benefit for busy clinical settings. However, further validity studies are warranted that include biological outcomes such as urine screens for substance use and sexually transmitted infections. Recent studies are showing that new antiretroviral combinations and short cycle therapy lead to viral load suppression with lower adherence rates and/or decreased exposure to drugs (<90%) than older combinations of therapy [17,18]. Thus, cut-offs lower than 90% could be assessed in future research. Finally, younger and perinatally infected youth were more likely to have adherence problems suggesting specialized interventions for this pediatric population transitioning into adulthood.

Limitations include the use of self-report measures and the lack of further data on the 113 (32%) youth who did not identify as having a problem behavior on the short screener. These 113 youth could have identified a problem behavior on the longer questionnaire. The use of personal interviewing versus fully computerized assessments to improve honest reporting was a limitation. The youth completing the baseline measures could have been influenced by knowing that they were eligible for the study based on the screener. Also, we did not recruit HIV + youth not in care at the five US sites. It is quite possible that risk behaviors are more prevalent among the YLH who are not accessing care or who refuse to participate in behavioral research studies. Finally, despite the benefits of YLH being assessed in five different clinics around the country, this is a sample of urban youth living in areas with high prevalence of HIV. Therefore, it is unclear to what degree similar results would be obtained in more rural or suburban populations or in urban populations that have a lower prevalence of HIV.

In conclusion, high-risk behaviors continue to be a concern in youth living with HIV. The findings from this multisite sample YLH highlight the need for interventions to reduce the impact of the disease on individual health and public health. The data from this study of YLH, showing that older youth have multiple problem behaviors, concurs with the findings of the National Institute of Drug Abuse, Park, and Colleagues. For these reasons, brief screening measures for risk behaviors require further study. A brief validated screener for health providers could help identify those youth in need of risk reduction interventions. Potentially, this could be a practical tool to help clinical providers address multiple risk behaviors and the HIV epidemic among our youth in the United States whether they are YLH or not.

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Screener Question*	Follow up question(s)*
DRUGS AND ALCOHOL: <i>Have you ever tried drugs or alcohol?</i> (If yes, proceed with follow up questions)	<i>Have you ever ridden in a car driven by someone (including yourself) who was high or had been using alcohol or drugs?</i> <i>In the last 3 months, have you ever used alcohol or drugs to relax, feel better about yourself, or fit in?</i> <i>In the last 3 months, have you ever used alcohol or drugs while you are by yourself (alone)?</i> <i>In the last 3 months, have you ever forgotten things you did while using alcohol or drugs?</i> <i>Have you ever gotten into trouble while you were using alcohol or drugs?</i> <i>Does your family or friends ever tell you that you should cut down on your drinking or drug use?</i>
TAKING HIV MEDICATION: <i>Have you been prescribed HIV medications or been told by your physician you should be on HIV medications (whether you take them or not)?</i> (If yes, proceed with follow up questions)	<i>If you are currently prescribed HIV medications, what percent of the time have you taken your HIV medications in the past month?</i> (0% if supposed to be on medications but not taking them)
SEXUAL RISK: <i>Have you ever had sexual intercourse?</i> (If yes, proceed with follow up questions)	<i>Have you had sexual intercourse without a condom (insertive anal, receptive anal, or vaginal) in the last 3 months?</i>

Figure 1.

*All questions taken from study screener but not exact screener form from study

Table 1

Demographic Characteristics of the Full Sample (N=352)

	N (%)	M (SD)
Site		
Fort Lauderdale	55(16)	
Philadelphia	93(26)	
Baltimore	59(17)	
Los Angeles	80(23)	
Detroit	65(19)	
Participant Age		20.36(2.46)
Participant Gender		
Male	204(58)	
Female	148(42)	
HIV Transmission		
Perinatal	60(17)	
Sexually acquired	281(80)	

Table 2

Means, Standard Deviations, T-Test Results for Problem Behaviors N = 186

	No Problem on Screener	Yes Problem on Screener	t-value	df***
Substance Use				
Number of Days used Alcohol in past 30 Days	1.44 (1.97)	2.41 (2.76)	3.32**	171
Number of Times used Alcohol in past 30 Days	1.92 (3.27)	4.17 (5.04)	3.08**	170
Maximum Number of Times used Alcohol in 1-Week	1.80 (2.89)	3.27 (3.68)	2.88**	170
Number of Days used Marijuana in past 30 Days	1.42 (2.44)	3.42 (4.23)	4.05**	171
Number of Times used Marijuana in past 30 Days	1.53 (3.34)	5.01 (6.92)	4.03**	169
Maximum Number of Times used Marijuana in 1-Week	1.38 (2.45)	3.21 (3.96)	4.01**	169
Sexual Risk				
Intercourse acts without a condom	7.85 (19.69)	16.72 (22.22)	2.81**	179
Adherence				
Viral Load	66.58 (75.38)	3987.49 (57.16)	4.22**	102

*** numbers are unequal due to missing data

* p < .05

** p < .01