Risk Behaviors of Youth Living With HIV: Pre- and Post-HAART

Marguerita Lightfoot, PhD,
Assistant Research Psychologist, Center for Community Health, University of California, Los Angeles, CA

Dallas Swendeman, MA,
Project Director, Center for Community Health, University of California, Los Angeles, CA

Mary Jane Rotheram-Borus, PhD,
Professor, Department of Psychiatry, University of California, Los Angeles, CA

W. Scott Comulada, MS, and
Biostatistician, Center for Community Health, University of California, Los Angeles, CA

Robert Weiss, PhD
Professor, Department of Biostatistics, Center for HIV Identification, Prevention, and Treatment Services, AIDS Institute, Department of Psychiatry, University of California, Los Angeles, CA

Abstract

Objective—To examine the transmission behavior among youth living with HIV (YLH), pre- and post-HAART.

Methods—Two cohorts were recruited: (1) 349 YLH during 1994 to 1996 and (2) 175 YLH during 1999 to 2000, after the wide availability of HAART. Differences in sexual and substance-use risk acts and quality of life were examined.

Results—Post-HAART YLH were more likely to engage in unprotected sex and substance use, to be more emotionally distressed, and to have lower quality of life than were pre-HAART YLH.

Conclusions—Targeted interventions for YLH that address reductions in transmission acts and aim to improve quality of life are still needed.

Keywords

HAART; HIV/AIDS; youth with HIV; substance use; sexual risk behaviors

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HIV infection among adolescents and young adults continues to be a significant and growing problem. It is estimated that half of HIV infections worldwide and one quarter of infections in the United States were acquired in adolescence.[1-3] By 2002, the Centers for Disease Control and Prevention reported 31,000 cases of AIDS and, among states reporting, an additional 23,000 HIV infections among 13- to 24-year-olds.[4] The actual number of youth living with HIV (YLH) in the United States is likely to be much larger than these reports because of variable reporting procedures and limited early detection of HIV, particularly among youth.[5] Other estimates of the number of YLH in the United States range between 110,000 and 250,000.[6,7] Some subpopulations of youth are at higher relative risk for HIV infections than are other groups, particularly young gay or bisexual men as well as African American and Latino youth. [8] Thus, youth at greatest risk for HIV infection are also those who are likely to be disenfranchised and stigmatized.[9]

Address correspondence to Dr Lightfoot, 10920 Wilshire Boulevard, Suite 350, Los Angeles, CA 90024-6521. mal@ucla.edu.

Significant improvements in HIV treatment have occurred over the past 8 years with the advent of highly active antiretroviral therapies (HAART). For example, the reduction of vertical transmission in response to HAART has been demonstrated,[10-12] lower viral loads have been linked to reduced probability of transmission,[13,14] and increasing numbers of persons on combination drug therapies are reporting "undetectable viral loads."[15] Although revolutionary in enhancing care options, HAART has also created new challenges in HIV primary and secondary prevention. HAART provides persons living with HIV (PLH) with a longer lifespan, resulting in more time and opportunities for transmission of HIV to occur. Simultaneously, evidence suggests that many PLH believe that sexual behaviors that could lead to transmission of HIV (ie, unprotected sex) are less risky if viral load is suppressed and the probability of transmission is lower.[16] There is also evidence that transmission behaviors have increased among PLH since the introduction of HAART.[16-19] However, previous research has been conducted with adults, and it is unclear if YLH are also increasing risk behaviors. Therefore, an examination of transmission behavior among YLH, pre- and post-HAART, is critical to inform prevention efforts.

Given the physiological and psychological benefits of HAART, it is anticipated the HAART would also influence the quality of life for persons living with HIV, and changes in quality of life have implications for sexual behavior. For example, frequency of continued high-risk sexual behavior is correlated with depression, anxiety, anger, hostility, and propensity to blame being HIV+ on others,[20,21] and behavioral coping strategies are less effective among PLH who engage in transmission acts compared to nonrisky PLH.[22-24] Consequently, examining how HAART has influenced the mental health of PLH has implications for reducing transmission risk. In addition, HAART involves taking several different pills with differing time schedules and conditions (ie, some with foods, liquids, or not), and these demanding requirements and subsequent side effects impact the PLH quality of life.[25,26] Thus, the needs of individuals living with HIV now focus not only on reduction of risk acts, but also on quality of life.

The goal of this study was to examine differences in YLH, their sex and substance use risk acts, their mental health, and quality of life before and after the advent of HAART. This was accomplished through the examination of 2 cohorts of YLH. The first cohort was recruited from 1994 to 1996, before the introduction of HAART. The second cohort was recruited from the same recruitment sites using comparable procedures from 1999 to 2000, after the wide availability of HAART. Comparing these 2 cohorts of YLH may offer insight into possible differences in behavioral patterns among YLH pre- and post-HAART.

Methods

Participants

Two cohorts of young people living with HIV were recruited from similar sites in AIDS epicenters at 5-year intervals: (1) 1994 to 1996 (pre-HAART sample)[27] and (2) 1999 to 2000 (post-HAART sample). Therefore, the cross-sectional data are drawn from 2 different cohorts of YLH collected at 2 different points in time, 1 pre- and the other post- introduction of HAART. English- and Spanish-speaking YLH were recruited through social service agencies, medical providers, street outreach, and other community advertisements in Los Angeles, San Francisco, New York, and Miami (Table 1). Each cohort was recruited from the same clinical and social service providers, and extensive community recruitment was also performed. Cohort 1 consisted of 349 YLH recruited over 32 months, and cohort 2 consisted of 175 YLH aged 13 to 24 recruited over an 18-month period. Consequently, the sample size for cohort 1 was larger than for cohort 2. Each cohort was recruited for separate intervention studies. This paper reports baseline data from each study.

Parental consent was obtained if youth were under age 18, the parents were available (ie, the youth was not homeless), and the parent knew the youth's HIV status. YLH were linked to medical care prior to study enrollment if they did not already have a medical provider. All procedures were approved by an internal review board at UCLA and at participating agencies. Each youth was paid $20 to $25 to participate in the 2-hour baseline interview.

Procedures

Interviewers collected information using computer-assisted personal interviews and audio computer-assisted self-interviews on laptop computers. Interviewers were trained in research ethics, emergency procedures for suicidal/homicidal ideations, psychosocial and substance abuse assessment, abuse reporting procedures, and study-specific protocols and tools. Training also included role-playing and in-depth discussions of hypothetical situations and appropriate responses. Mock interviews were completed prior to interviewing YLH in the field to ensure proper administration of assessment tools and study protocols. Interviews were audiotaped, and more than 10% were randomly selected for quality assurance reviews. Interviewers met or exceeded quality assurance expectations on over 90% of tapes reviewed. The interview protocols and the assessment were the same for both cohorts.

Measures

Assessments measured behavior for both lifetime and previous 3 months time frames (defined as "recent" or "current" behaviors). Strategies to enhance accuracy of recall included in-depth probing of life events such as job or school changes, celebrations, relationships, places of residence, etc; a timeline visual aid anchoring the 3-, 6-, and 12-month time frames for these life events; and frequent and consistent references throughout the interview to the timeline and anchored events. Interviewers were also trained to help participants sum behaviors over the different time frames and to confirm accuracy of reporting via consistency checks and probing.

Health Status

Physical health—HIV disease progression and health status were assessed by questions on AIDS diagnosis, symptoms of HIV infection, date and result of the most recent T-cell/CD4 count, and the date the participant first tested positive for HIV (to calculate years known HIV positive). A previous study with YLH[28] indicated self-report of CD4 cell counts and medical chart reviews were highly reliable (intraclass correlation 0.85).

Transmission Acts

Sexual behavior—YLH self-reported lifetime and recent sexual behavior, number of male and female sex partners, number of injection-drug-using partners, lifetime diagnosis of any STD, number of vaginal and anal sex acts, and number of protected sex acts.

Substance use—Measures used specific street-name probes for lifetime and recent (ie, past 3 months) use of alcohol, marijuana, stimulants (ie, amphetamine, methamphetamine), inhalants, cocaine, crack, hallucinogens, heroin, and injection use. Measures were dichotomized based on frequency of use; 10 or more uses of a specific substance was categorized as frequent. These measures were then used to derive a hard drug-use index, constructed using all substance domains excluding cigarettes, alcohol, and marijuana.

Quality of Life

Negative life events—Sexual abuse history was assessed by asking youth if they had "unwanted, uninvited, or forced sex" in their lifetime and in the past 3 months. Suicide attempts (ie, "Have you made any attempts to harm or kill yourself?") were also reported for the lifetime and past 3 months.

Problem behaviors—Problem behaviors were measured using a 9-item delinquency scale based on DSM III-R conduct disorder criteria. Youth also reported if they had spent time in jail during their lifetime.

Emotional distress—The Brief Symptom Inventory (BSI)[29] was administered to assess emotional distress. Participants report the degree of distress experienced during the previous week for each of 53 items (eg, "Feeling easily annoyed or irritated") with responses scored from 0 (not at all) to 4 (extremely). The scale provides a global estimate of emotional distress (α=.97) and several primary symptom domains, including depression (6 items, α=.84) and anxiety (6 items, α=.84). In addition, the BSI provides normative data to determine a clinical cutoff level that approximates having a diagnosable psychiatric disorder.

Coping style—Coping style was measured with a modified version of the Dealing With Illness Inventory.[30,31] The measure asks how often particular coping strategies are used to help deal with knowing that one is HIV positive during the previous 3 months. A 5-point Likert scale is used to give responses ranging from never (1) to always (5) for 39 items factor-analyzed into 7 subscales: positive action (eg, "Formed a plan of action"), depression/withdrawal (eg, "Avoided being with people"), self-destructive (eg, "Used drugs more to forget"), social support (eg, "Went to a friend or professional to help you feel better), spiritual hope (eg, "Trusted your belief in God"), nondisclosure (eg, "Tried to keep others from knowing how you were feeling), and passive problem-solving (eg, "Depended on others to cheer you up or make you feel better").

Statistical methods—We compared the 2 cohorts of YLH on sociodemographic, HIV measures, sexual behavior, drug use, psychological assessment, and quality of life variables. Differences in continuous variables were tested using 2-sided t tests or Wilcoxon rank sum tests if the data were highly skewed. Associations between categorical data variables were tested using chi square or Fisher's exact test if expected counts were less than 5 in any of the contingency table cells. To account for potential differences in the samples by examining if either cohort was generally riskier, we ran logistic regression on categorical variables and ANOVA on continuous variables that adjusted for alcohol or drug use of more than 5 times in the past 3 months. We also adjusted for delinquent acts in the past 3 months. Finally, we controlled for lifetime sexual risk and substance use variables in examining recent behavior.

In all cases, adjusted analyses were similar to unadjusted analyses, so we report unadjusted analyses. In addition, to account for occasional recreational drug use when comparing the substance use between the 2 cohorts of YLH, we examined heavy substance use. Heavy use was defined as use of more than 10 times in the reported period. All statistical analyses were performed using SAS statistical software 8.01.[32]

Results

Description of YLH

There were a total of 175 youth in the post-HAART cohort and 349 youth in the pre-HAART cohort. There was no significant difference between the cohorts' gender, sexual orientation, ethnicity, age, socioeconomic status, or where youth were recruited. As shown in Table 1, YLH were predominantly recruited from social service agencies (42%) and medical clinics (33%). The mean age of youth was 20.8 years (SD=2.2) and almost three quarters of the YLH were male (72%). YLH were mostly of Latino (40%) or African American (30%) ethnicity; about two thirds (65%) of the sample reported they were gay or bisexual. A significantly higher percentage of youth in the pre-HAART cohort had graduated from high school (46% vs 59%; $\chi^2 = 8.58$, df=1, P<.01) and YLH in the pre-HAART cohort completed a higher mean grade in

high school (10.9 vs 11.4; t=2.29, df=510, P=.02). About a third of YLH (36%) reported a financial situation in which they were poor or very poor.

Physical Health

In the post-HAART sample, 76% of YLH had used HAART in their lifetime and 53% were currently on HAART regimens. Significantly more youth in the post-HAART cohort had reported an AIDS diagnosis (21% vs 10%; χ^2 = 10.90, df=1, P<.01), and a larger percentage had experienced HIV symptoms in their lifetime (49% vs 39%; χ^2 = 5.00, df=1, P=.03). However, YLH in the post-HAART and pre-HAART cohorts did not differ in CD4 cell count. The post-HAART cohort reported a median CD4 count of 421 (interquartile [IRQ]=261 to 632), and the pre-HAART cohort reported a median CD4 count of 455 (IRQ=267 to 660). Youth in the post-HAART cohort also reported knowing their HIV diagnosis (median = 2.6 years, IRQ=1.0 to 4.8) for a significantly longer period of time than did youth in the pre-HAART cohort (median = 1.6 years, IRQ=0.7 to 3.3; P<.001).

Transmission Acts

Sexual behavior—YLH in the post-HAART cohort reported a mean number of 10.4 (SD=26.9) sexual partners, and YLH in the pre-HAART cohort reported a mean of 5.8 (SD=26.5) sexual partners (Table 2). With their first 5 partners, the groups were significantly different; the mean number of unprotected sex acts was 10.8 (SD=38.8) in the post-HAART cohort and 4.8 (SD=18.7) in the pre-HAART cohort. YLH in the post-HAART cohort reported having unprotected sex 42% of the time, whereas youth in pre-HAART reported unprotected sex 27% of the time. The 2 cohorts of youth were significantly different in their sexual behavior. Post-HAART youth were more likely than youth in the pre-HAART cohort to have had an injection drug-using partner in their lifetime (OR=2.16, CI=1.48–3.16). Post-HAART youth were also less likely to have had an STD than were pre-HAART YLH (OR=0.62, CI=0.43–0.90). Post-HAART youth were almost twice as likely as pre-HAART youth to have had unprotected sex in the last 3 months (OR=1.96, CI=1.34–2.87). Therefore, transmission acts were higher among the post-HAART YLH.

Substance use—The post-HAART cohort reported more substance use than did youth in the pre-HAART cohort. The post-HAART cohort was over twice as likely as pre-HAART YLH to have used alcohol (OR=2.51, CI=1.71–3.68), marijuana (OR=2.36, CI=1.55–3.58), or stimulants (OR=2.27, CI=1.29–3.99) more than 10 times in the past 3 months. Youth in the post-HAART cohort were over 3 times as likely as pre-HAART YLH to use inhalants more than 10 times in the past 3 months (OR=3.29, CI=1.06–10.21). Youth in the post-HAART cohort were over 3 times as likely as pre-HAART youth to have used cocaine (OR=3.06, CI=1.07–8.75) or crack cocaine (OR=3.43, CI=1.22–9.58) more than 10 times in the past 3 months. Post-HAART youth were almost 3 times as likely as pre-HAART youth to report using any hard drugs more than 10 times in the previous 3 months (OR=2.80, CI=1.74–4.49). Post-HAART youth were using more drugs and using more hard drugs than pre-HAART youth.

Quality of Life

As shown in Table 3, post-HAART youth were almost twice as likely as youth in the pre-HAART cohort to have been sexually abused in their lifetime (OR=1.92, CI=1.32–2.79). Comparisons with normative samples of outpatient adolescents provided by the BSI indicate that YLH in the post-HAART cohort were also significantly more likely to be clinically distressed than were YLH in the pre-HAART cohort (OR=1.64, CI=1.10–2.43). YLH in the post-HAART and pre-HAART cohorts were also significantly different in the types of coping strategies employed. Examination of mean differences (95% confidence limits [CL]) indicate that the post-HAART youth were significantly less likely to use positive action coping (mean

difference = -2.04, CL= -3.85 to -0.22) and more likely to use withdrawal (mean difference = 1.49, CL=0.77–2.21), self-destructive (mean difference = 1.70, CL=0.89–2.51), non-disclosure (mean difference = 1.31, CL=0.51–2.11), and passive problem-solving techniques for coping (mean difference = 1.44, CL=0.32–2.57).

Discussion

The sample is a major strength of the current study. The sample represents 2 cohorts of youth living with HIV, each from a major AIDS epicenter. This sample of 529 youth represents a major accomplishment in recruiting youth living with HIV. There are an estimated 110,000 to 250,000 young people living with HIV in the United States, but fewer than 20,000 young people have been identified as seropositive,[33] and only 1500 could be identified as being linked to care in 1995 when the pre-HAART cohort for the current study was recruited.[34] The challenges in identifying and subsequently linking seropositive youth to care suggest the need for early detection of HIV among young people, as one quarter of the 40,000 new HIV infections in the United States annually are among individuals under age 21.[35]

The 2 cohorts of youth living with HIV, pre- and post-HAART, were not significantly different in their age, gender, ethnicity, or self-reported sexual orientation. This sample reflects the ethnic diversity and socioeconomic profile of youth living with HIV in the United States. Without the Miami site, cohort 2 had fewer women, which might explain the lack of a gender effect. However, the youth recruited post-HAART knew their diagnosis for a year longer and were significantly more ill than youth recruited pre-HAART. Given the availability of HAART, it is surprising that the post-HAART youth experienced more symptoms. This suggests that although they are being identified as HIV-positive at a younger age, these youth are being identified later in the progression of the disease. Therefore, it is also likely that they were infected at a younger age. These findings indicate the need to mount efforts for the early detection of HIV. Health care providers need to assess an adolescent patient's sexual and substance use behavior in order to appropriately offer HIV testing, so that young people can be identified earlier in their disease progression.

Recently, there have been a number of concerns expressed regarding the impact of HAART on the risk behaviors of persons living with HIV.[16,36-38] The fears concerning increased risk behaviors as a result of HAART are supported by the findings from this study. Youth post-HAART were twice as likely to have had unprotected sex in the previous 3 months than were pre-HAART youth. Although this study is cross sectional and, therefore, cannot imply causation, these findings indicate the need for continued attention to the issue of sexual risk and the impact of HAART. Future longitudinal studies are needed that assess changes in risk behaviors among this group over time.

In addition to engaging in sexual risk behavior that could spread HIV, these youth are also engaging in higher levels of other problem behaviors. Post-HAART youth were over twice as likely as pre-HAART YLH to have used alcohol or marijuana, 3 times as likely to have used crack cocaine, and almost 3 times as likely to have used any hard drug in the previous 3 months. These analyses reflect frequent use (>10 times for each substance), not simply recreational use. Post-HAART youth were also more likely than pre-HAART youth to have committed a delinquent act in their lifetime or spent time in jail. There seems to be a constellation of risk for some youth. Consequently, youth involved in institutional systems due to their engagement in other problem behaviors need to be assessed and provided HIV prevention services. For example, these data suggest that HIV prevention activities and HIV testing for youth involved in the juvenile justice system are warranted.

The 2 cohorts of YLH were recruited from very similar, and in many cases the same, agencies. Considering the cohorts were demographically similar, it is not likely that the difference between these 2 groups' behaviors reflects where the youth were recruited. Recruitment strategies were also very similar, and potential differences in the samples because of the study inclusion criteria were controlled for in the analysis. Consequently, these data suggest that post-HAART youth are engaging in multiple problem behaviors at higher rates than did pre-HAART youth.

Furthermore, youth post-HAART experienced a poorer quality of life than YLH prior to HAART. Post-HAART YLH were significantly more likely to be emotionally distressed than were YLH in the pre-HAART cohort. About 53% of the post-HAART youth reported currently being on a HAART regime whereas overall about 76% had current or past HAART utilization. One might expect post-HAART youth to maintain a sense of well-being because of the effects of current treatments (eg, prolonged lifespan, increased choice in treatment). Contrary to what we expected, our data indicate that YLH report more emotional distress after the year in which HAART was introduced. As previously mentioned, post-HAART youth were being identified later in their disease progression and were experiencing more HIV-related symptoms. Therefore, the increased emotional distress is not surprising. However, it is unclear why more youth are not currently taking HAART. It may be that physicians are reluctant to prescribe antiretroviral medications to certain subpopulations of youth, such as substance-using youth, because they fear the youth will not adhere to the treatment regimen.[39,40] In addition, age has been found to be related to greater nonadherence among HIV-positive individuals, with younger YLH being less adherent,[41,42] which may also impact medical provider decisions to prescribe HAART. Therefore, YLH may be living longer with HIV, but we cannot assume their quality of life is improving. Future studies are necessary to determine the factors and develop interventions related to increasing adherence to HAART by YLH and increasing physician prescribing behavior.

The limitations of this study should be recognized. We have relied on self-reports for sexual risk and substance use behavior, which has potential for reporting biases. However, a number of precautions were taken to minimize reporting bias. To enhance veracity of self-report of behaviors and attitudes, sensitive questions (ie, sexual and substance use behavior) were delivered via audio-computer-assisted self-interviewing (ACASI). In addition, careful and thorough training of interviewers in neutral, nonjudgmental administration of the interview was ensured through review of audiotaped interviews, and the use of a relatively restricted reporting period may have reduced the potential for recall biases. Further, because these data were collected in different years, there may have been other confounding variables that were not controlled in the current analysis. Finally, because this is a cross-sectional study, causal inferences cannot be made from associations presented. However, this study suggests that future research examining this issue is warranted.

These data suggest that young people living with HIV after the introduction of HAART engage in problem behaviors at a rate higher than that of YLH pre-HAART. Traditionally, YLH have been neglected as a focus for preventive interventions. With the introduction of new therapies and increasing resources being allocated for patient access to those new therapies, YLH are in further danger of being ignored. However, the need for interventions designed for YLH has not changed since the introduction of HAART: targeted interventions for YLH that address risk behaviors and aim to improve quality of life are more needed now than ever before.

Acknowledgments

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Table 1

Sociodemographics and Self-reported Health Status for Post-HAART and Pre-HAART YLH

	Post-HAART % (n)	Pre-HAART % (n)	Total % (n)	P value
Site[a]	n = 175	n = 349	n = 524	
Los Angeles	42% (73)	38% (134)	40% (207)	
San Francisco	19% (33)	19% (66)	19% (99)	
New York	39% (69)	29% (100)	32% (169)	
Miami	—	14% (49)	9% (49)	
Type of agency recruited from				.3
Social services	47% (81)	40% (140)	42% (221)	
Medical	32% (56)	34% (117)	33% (173)	
Outreach/other	21% (37)	26% (92)	25% (129)	
Mean age (SD)	20.9 (2.4)	20.8 (2.1)	20.8 (2.2)	.5
Gender				.6
Males	70% (123)	72% (252)	72% (375)	
Females	30% (52)	28% (97)	28% (149)	
Ethnicity				.2
Latino	42% (74)	38% (133)	40% (207)	
African American	33% (57)	29% (101)	30% (158)	
White	17% (30)	19% (65)	18% (95)	
Other	8% (14)	14% (50)	12% (64)	
Self-reported sexual identity				.2
Gay or bisexual	61% (106)	66% (232)	65% (338)	
Straight	33% (57)	30% (103)	31% (160)	
Not reported or questioning	7% (12)	4% (14)	5% (26)	
Graduated from high school/GED[b]	46% (80)	59% (197)	55% (277)	.003
Mean highest grade completed (SD)[c]	10.9 (2.4)	11.4 (2.3)	11.3 (2.3)	.02
Financial situation of household				.5
Very poor, struggling to survive	18% (31)	13% (44)	15% (75)	
Poor, barely paying bills	19% (33)	22% (75)	21% (108)	
Have the necessities	31% (55)	32% (112)	32% (167)	
Comfortable	32% (56)	33% (115)	33% (171)	
Physical Health				
Diagnosed with AIDS	21% (36)	10% (35)	14% (71)	.001
Experienced HIV symptoms	49% (84)	39% (131)	42% (217)	.03
Median (Interquartile range)				
CD4 cell count[d]	421 (261-632)	455 (267-660)	450 (266-646)	.4
Years known HIV positive	2.6 (1.0-4.8)	1.6 (.7-3.3)	1.8 (.8-3.7)	<.001
Sexual Behavior				
Number of partners	10.4 (26.9)	5.8 (26.5)	7.4 (26.7)	< .001

	Post-HAART % (n)	Pre-HAART % (n)	Total % (n)	P value
Number unprotected sex acts	10.8 (38.8)	4.8 (18.7)	6.8 (27.2)	< .001
Percent unprotected sex	42% (74)	27% (95)	32% (169)	< .001

[a] No test statistic calculated because Miami is not in post-HAART sample

[b] n=332 for pre-HAART

[c] n=337 for pre-HAART

[d] n=116 for post-HAART and n=290 for pre-HAART

Table 2

Comparison of Sexual and Recent Substance Use Behavior Between Post-HAART and Pre-HAART YLH

	Odds Ratio[a]	95% Confidence Limits
Recent Sexual Behavior		
Unprotected sex	1.96	(1.34, 2.87)[**]
Lifetime Sexual Behavior		
IDU sexual partner	2.16	(1.48, 3.16)[*]
STD diagnosis	0.62	(0.43, 0.90)[*]
Frequent Substance Use		
Alcohol	2.51	(1.71, 3.68)[**]
Marijuana (nonprescribed)	2.36	(1.55, 3.58)[**]
Stimulants	2.27	(1.29, 3.99)[**]
Inhalants	3.29	(1.06, 10.21)[*]
Cocaine	3.06	(1.07, 8.75)[*]
Crack	3.43	(1.22, 9.58)[*]
Heroin	2.41	(.72, 8.00)
Hard drugs	2.80	(1.74, 4.49)[**]

Note.

[*] $P < .05$;

[**] $P < .01$

[a] Pre-HAART is referent group

Table 3

Comparisons of Quality of Life Measures Between Post-HAART and Pre-HAART YLH

	Odds Ratio[a]	95% Confidence Limits
Quality of Life		
Sexually abused, Lifetime	1.92	(1.32, 2.79)[*]
Attempted suicide, Lifetime	1.13	(.78, 1.63)
Committed delinquent act, Recent	2.59	(1.75, 3.84)[**]
BSI clinical level, Recent	1.64	(1.10, 2.43)[*]
	Mean Difference[b]	
BSI Score (SD)		
Anxiety	.12	(-.04, .29)
Depression	.12	(-.05, .28)
Total	.17	(.03, .30)[*]
Coping Style Score (SD)		
Positive action	-2.04	(-3.85, -.22)[*]
Depression withdrawal	1.49	(.77, 2.21)[**]
Self-destructive	1.70	(.89, 2.51)[**]
Social support	-.15	(-1.08, .78)
Spiritual hope	.67	(-.13, 1.47)
Nondisclosure	1.31	(.51, 2.11)[**]
Passive problem solving	1.44	(.32, 2.57)[*]

Note.

[*] P < .05;

[**] P < .01

[a] pre-HAART is referent group

[b] post-HAART mean minus pre-HAART mean