Published in final edited form as:

J Subst Abuse Treat. 2016 May ; 64: 55–61. doi:10.1016/j.jsat.2016.01.011.

Utilization of alcohol treatment among HIV-positive women with hazardous Drinking

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Abstract

Hazardous alcohol consumption has been frequently reported among women with HIV infection and is associated with a variety of negative health consequences. Treatments to reduce alcohol use may bring in health benefits. However, little is known regarding the utilization of alcohol treatment services among HIV+ women with hazardous drinking. Using data from the Women's Interagency HIV Study (WIHS), this study assessed utilization of any alcohol treatment in the past 6 months and performed multivariable logistic regression to determine correlates of receipt of any alcohol treatment. Among 474 HIV+ women reporting recent hazardous drinking, less than one in five (19%) reported recent utilization of any alcohol treatment. Alcoholics Anonymous (AA) was the most commonly reported (12.9%), followed by inpatient detoxification (9.9%) and outpatient alcohol treatment program (7.0%). Half (51%) receiving any alcohol treatment reported utilization of multiple treatments. Multivariable analyses found alcohol treatment was more often utilized by those who had social support (Odds ratio [OR]=1.68, 95% Confidence Interval [CI]=1.00 to 2.83), fewer economic resources (income $\leq$ \$12,000 vs. $>$ \$12,000, OR = 3.10, 95% CI=1.53 to 6.27), higher levels of drinking (16–35 drinks/week vs. 12–15 drinks/week, OR=3.02, 95% CI=1.47 to 6.21; 36+ drinks/week vs. 12–15 drinks/week, OR=4.41, 95% CI=2.03 to 9.59), and those who reported any illicit drug use (OR=2.77, 95% CI=1.44 to 5.34). More efforts are needed to enhance the utilization of alcohol treatment. Our findings highlight the unique profile of those who utilized alcohol treatment. Such information is vital to improve treatment delivery to address unmet need in this particular population.

Keywords

Women with HIV; hazardous drinking; alcohol treatment; utilization; social support

1. Introduction

Alcohol use is common among women with HIV infection in the United States. Approximately half of HIV-positive women reported any alcohol consumption in the past year with 14%–24% drinking at hazardous levels (Cook et al., 2009). Recent studies have shown that hazardous drinking, often defined as >7 drinks per week or >3 drinks per occasion for women (Willenbring, Massey, & Gardner, 2009), could affect multiple outcomes throughout the entire HIV care continuum. Studies have shown that hazardous drinking is associated with low engagement and retention in HIV care (Chander, Lau, & Moore, 2006 and Cunningham et al., 2006), suboptimal adherence to HIV medication (Braithwaite et al., 2005, Chander et al., 2006, Cook et al., 2001 and Hendershot, Stoner, Pantalone, & Simoni, 2009), increased HIV viral load (Chander et al., 2006 and Samet et al., 2005), increased risky sexual behaviors (Hutton et al., 2012), and more rapid HIV disease progression (Wu, Metzger, Lynch, & Douglas, 2011). In addition, heavy alcohol consumption imposes greater risk for cirrhosis and hepatocellular carcinoma and worsens other liver conditions among HIV-positive women with Hepatitis C Virus (HCV) co-

infection (Cainelli, Concia, & Vento, 2001, Cohen et al., 2002 and Joshi, O'Grady, Dieterich, Gazzard, & Agarwal, 2011).

A variety of treatment options are available to address a wide spectrum of unhealthy drinking ranging from risky drinking to chronic alcohol dependence (Willenbring et al., 2009). Prior studies in the United States (US) general population have consistently found that participation in alcohol treatment programs, (e.g., detoxification, Alcoholics Anonymous or other 12-step programs, halfway houses) improves outcomes in people with alcohol use disorders (AUD) (Dawson, Grant, Stinson, & Chou, 2006, Hasin et al., 2013, Moos & Moos, 2004, 2006, Timko, Debenedetti, & Billow, 2006 and Ye & Kaskutas, 2009). Nevertheless, community studies of treatment patterns among the general population have repeatedly demonstrated substantial underutilization of alcohol treatment (Cohen, Feinn, Arias, & Kranzler, 2007, Harris & Edlund, 2005, Mojtabai, 2005 and Wu, Ringwalt, & Williams, 2003).

Andersen's Behavioral Model of Health Services Use (Andersen, 2008) has been widely used to help better understand access and utilization of health care services (Babitsch, Gohl, & von Lengerke, 2012, Dawson, Goldstein, & Grant, 2012, Goldstein, Dawson, & Grant, 2010 and Mojtabai, 2005). This model classifies potential individual and contextual determinants into 3 domains: predisposing, enabling, and need factors. Predisposing factors represent individuals' predisposition affecting services use, such as demographics, social structure, and health beliefs. Enabling factors refer to various characteristics influencing care delivery, such as financial or societal sources for care, availability of and access to care providers. Need factors include health status assessed by health professionals or perceived by patients themselves (e.g., severity of drinking problems, comorbid health conditions, and co-existing mental health and substance abuse problems).

Provision of alcohol treatment services may result in substantial benefits in health and wellbeing among HIV-positive women who are hazardous drinkers. However, little is known about their utilization of alcohol treatment. The objectives of this study were to describe utilization and, under the framework of the Andersen's Behavioral model, to determine factors associated with utilization of any alcohol treatment among HIV-positive women with hazardous drinking.

2. Material and Methods

2.1. Study sample

This study used data from the Women's Interagency HIV Study (WIHS), the largest, observational prospective cohort study of HIV disease in US women (Bacon et al., 2005). The WIHS recruited HIV-positive women from 6 study sites across the US: Brooklyn, New York; Bronx, New York; Chicago, Illinois; Los Angeles, California; San Francisco, California; and Washington, District of Columbia. To better reflect real-world experience of HIV disease and management, women were recruited via various venues, including HIV primary care clinics, HIV testing sites, hospital-based programs, community outreach sites, and research programs (Barkan et al., 1998). The questions assessing alcohol treatment utilization were implemented from 1994 to 2002. The present study was a cross-sectional

study, in that information from each participant was based on the first visit in which women reported hazardous drinking. Written informed consent was obtained for all women participating in WIHS and the institutional review board of the University of Florida approved this study to analyze existing WIHS data.

2.2. Measurements

Hazardous drinking—Alcohol use questions assessed frequency and quantity, and weekly alcohol consumption was calculated to define hazardous drinking. The present study defined hazardous drinking as ≥ 12 drinks per week (Gordon et al., 2001 and Parsons, Golub, Rosof, & Holder, 2007). In the absence of a formal AUD diagnosis in WIHS, using this relatively higher criterion than the NIAAA threshold (> 7 drinks per week or > 3 drinks per day for women) enhanced the specificity to better identify women who experienced alcohol-related negative consequences and hence, were in need of alcohol treatment.

Alcohol treatment use—Following the alcohol consumption questions, recent use (in the past 6 months) of alcohol treatment was assessed by asking: “during the past 6 months \since your last visit, have you been in an alcohol treatment program? I am interested in any alcohol treatment programs you may have been in, including inpatient and/or outpatient alcohol detoxification, halfway houses, Alcoholics Anonymous (AA), and/or other alcohol treatment programs.” A series of 5 subsequent questions were then asked of those who responded affirmatively to that question, inquiring about specific sources of treatment.

Based on the frequency of sources of treatment, we constructed a hierarchy of two mutually exclusive types of care (Dawson et al., 2012): utilization of formal sources of care (inpatient detox or outpatient alcohol treatment), irrespective of whether any informal sources of care were also used, and utilization of informal sources of care (AA, halfway houses, etc) only.

Predisposing factors—Predisposing characteristics affecting care-seeking behavior included age (18–35, 36–42, 43+), race/ethnicity (Hispanic, Black non-Hispanic, and White non-Hispanic/other races), educational attainment ($\leq$ high school vs. $\geq$ college), employment status, and marital status (married/cohabiting vs. single/never married).

Enabling factors—Factors facilitating or acting as barriers to the utilization of alcohol treatment included family income (≤ 12 K vs. > 12 K), health insurance coverage (yes/no), and perceived social support (yes/no). Strong support and aid from family members, friends and social connections have been associated with greater likelihood of entry into treatment (Grant, 1997 and Mowbray, 2014) compared with those who lack such support. A dichotomized social support variable was determined by positive responses to all three questions in the general social support domain: whether receiving any help (caring for children, getting a ride somewhere or borrowing something) from family members and/or friends (yes/no); whether receiving comfort and encouragement from family members and/or friends (yes/no); whether family members and/or friends listen and/or try to understand participants’ concerns (worries/troubles) since the last visit (yes/no) (Barkan et al., 1998).

Need factors—Need factors included the amount of weekly alcohol intake categorized into 3 levels: 12–15, 16–35, and 36+ drinks; presence of depressive symptoms measured as a score of the Center for Epidemiological Studies Depression Scale (CES-D) equal or greater than 16 (Tandon, Cluxton-Keller, Leis, Le, & Perry, 2012); use of any illicit drugs defined as using marijuana, cocaine, “crack” or freebase cocaine, heroin, methadone, and other drugs in the past 6 months. Overall health status was measured by a shortened version of the Medical Outcome Study (MOS) - HIV health survey scoring from 0 to 100 (Liu et al., 2006). HCV status was determined by testing antibody by second-generation or third-generation enzyme linked immunoassay (Ortho-Diagnostic Systems, Rochester, New York, USA), testing HCV-RNA by HCV-branched DNA (Quantiplex 2.0 branched chain DNA-enhanced label amplification assay; Bayer-Versant Diagnostics, formerly Chiron Diagnostics, Emeryville, California, USA) and by reverse transcriptase polymerase chain reaction (COBAS Amplicor HCV Detection Kit, Roche Diagnostic Systems, Pleasanton, California, USA). HIV-RNA was measured using the isothermal nucleic acid sequence-based amplification (NASBA/Nuclisens) method (bio-Merieux, Durham, North Carolina, USA) with detection limit of 80 copies/ml.

2.3. Statistical analysis

Descriptive analyses were performed to describe recent use (in the past 6 months) of any alcohol treatment, specific types of treatment, as well as potential predictors. We performed logistic regression on each predictor to determine its bivariate association with alcohol treatment. Any variable statistically significant at an α of 0.05 from these models as well as those that were predefined as important predictors based on prior literature (e.g., age, race, social support), were retained in the final multivariable logistic regression models to examine independent correlates with receiving any alcohol treatment. A penalized maximum likelihood estimation (PMLE), also called Firth bias correction method, was used to reduce small sample bias (King & Zeng, 2001).

In multivariable models requiring complete information for all included variables, even small amounts of missing data for each of the predictors can result in sizable sample reduction. Although the missing data for each variable were no more than 6%, the total amount of missing data in the final complete case model accounted for over 17% of the whole sample. To remediate this, we used multiple imputation (MI) with a multivariate normal approach (Schafer, 1999). We generated 5 copies of complete data sets with missing values imputed by random draws from the multiple imputation models. Multivariable logistic regression analysis was performed independently on each of the 5 imputed data sets. The resulting estimates for each variable were averaged to give a mean estimate and adjusted standard error according to Rubin’s rules (Rubin, 1987). No interaction among covariates was detected and therefore the final model was presented without the inclusion of any interaction terms. All analyses were conducted using SAS statistical package, version 9.4.

3. Results

This study identified a total of 474 HIV-positive women who reported recent hazardous drinking criteria (≥ 12 weekly drinks). As shown in table 1, 68.8% of the participants were

36 years of age or older. The majority of the women were Black non-Hispanic (68.6%), had high school or less education (76.8%), and were single or never married (69.8%). Most women reported being unemployed (85.6%), having an average household income of no more than \$12,000 (73.2%), having any kind of health insurance (75.7%), and around 60% reported positive responses to all 3 social support questions. A median of 21 drinks per week was reported with approximately one fourth (23.4%) of the sample drinking at least 36 drinks per week over the past 6 months. Depressive symptoms (CES-D $\geq$ 16) (67.2%) and recent illicit drug use (71.9%) were common. More than half of this sample was HIV/HCV-co-infected.

As shown in table 2, among HIV-positive women with a recent episode of hazardous drinking, 19% (n=90) reported recent alcohol treatment utilization. More specifically, 13.7% used at least one formal source of care and 5.3% used only informal sources of care. The most commonly reported type of treatment was AA (12.9%), followed by inpatient detoxification (9.9%) and outpatient alcohol treatment program (7.0%). Half (51%) of women who received any alcohol treatment reported using more than one type of alcohol treatment. Among women who had used at least one formal source of care, 61.5% also attended AA and 20% obtained care from other sources.

Results from the multivariable model suggested those with household income $\leq$ \$12,000 had greater odds of utilization of any alcohol treatment than those with higher household income (Odds Ratio [OR] = 3.10, 95% CI=1.53 to 6.27). Having social support achieved significance with greater odds of obtaining alcohol treatment (OR=1.68, 95% CI=1.00 to 2.83) after controlling for other covariates. The dose-response association between levels of alcohol consumption and odds of utilizing any alcohol treatment persisted after multivariable adjustment. Compared with those who reported weekly drinking of 12–15 drinks, women who drank 16–35 drinks per week had 3.02 times greater odds of receiving any alcohol treatment (OR=3.02, 95% CI=1.47 to 6.23), and the OR escalated to 4.41 when the levels of drinking increased to more than 35 drinks per week (OR=4.41, 95% CI=2.03 to 9.59). Finally, illicit drug users had greater odds of reporting alcohol treatment utilization (OR=2.77, 95% CI=1.44 to 5.34) than non-drug users. No other significant association was found.

4. Discussion

Among HIV-positive women in the WIHS who reported hazardous drinking, one in five reported recent utilization of alcohol treatment; and among those women receiving treatment, half received multiple types of treatments among which AA was the most common; no HIV factors were associated with treatment entry; a mixture of enabling (income and social support) and need factors (drinking levels and drug use) were important in explaining utilization of alcohol treatment.

The prevalence of alcohol treatment reported by our study was consistent with findings from other studies: National Survey on Drug Use and Health (DSDUH) found that among individuals with combined AUD or SUD, the prevalence of past-year treatment utilization for substance use disorders (SUD) was as high as 22.1% (Mojtabai, 2005). Indeed, studies

on low-socioeconomic class women with substance use disorders also revealed that the rates of past-year substance abuse treatment could be as high as 44.0% (Hansen et al., 2004 and Rosen, Tolman, & Warner, 2004). Mojtabai suggested that the high levels of utilization of alcohol or substance abuse treatments may suggest more severe issues of AUD or SUD (Mojtabai, 2005).

This study found no statistically significant association of age and race with alcohol treatment utilization among HIV-infected women with drinking problems. Previous studies have yielded inconsistent results on the association of age with treatment seeking. Some studies have found that older individuals were more likely to receive treatment (Cohen et al., 2007, Grella, Polinsky, Hser, & Perry, 1999, Tighe & Saxe, 2006 and Weisner, Matzger, Tam, & Schmidt, 2002) while others have found that younger people were more likely to utilize treatment services (Ilgen et al., 2011 and Harris & Bowe, 2008) In terms of race/ethnicity, our finding is consistent with prior work that found no racial difference in receipt of alcohol treatment (Hatzenbuehler, Keyes, Narrow, Grant, & Hasin, 2008).

The finding of the positive association of low income with alcohol treatment utilization was generally consistent with prior observations among non-HIV-infected individuals with AUD (Cohen et al., 2007, Ilgen et al., 2011 and Mojtabai, 2005). The exact reason for observing this association among HIV-infected women is unclear although it can be related to greater access to public services and public entitlements among low-income individuals (Weisner, 1993). Substance abuse treatments have traditionally been closely affiliated with the criminal justice and welfare system (Weisner & Schmidt, 1995). Individuals from lower socio-economic classes are usually over-represented in the criminal justice and welfare system and thus, may be more likely to receive treatment for their alcohol and drug abuse problems. For example, the most common form of treatment reported in the present study was participation in Alcoholic Anonymous, which is available at no cost.

Our finding highlights social support as a potentially important predictor of alcohol treatment utilization in HIV-infected women. The effect of social support has been rarely investigated in prior alcohol treatment utilization studies as an independent variable (Ilgen et al., 2011). Although a full-scale social support measure, like the 27-item social support questionnaire (SSQ), was not utilized, we found greater odds of receiving alcohol treatment among HIV-infected women with greater social support. Emotional support obtained from families and friends may help HIV-infected women overcome significant social stigma associated with alcohol abuse and HIV infection and motivate them to seek care for both conditions. Also, vital ancillary services provided by women's social networks, such as childcare, transportation, or important family services, may further enhance access to alcohol treatment for many HIV-infected women with AUD. Lack of adequate supporting system has contributed substantially to low rates of alcohol treatment uptake. Future alcohol treatment programs focusing on HIV-infected women may consider the integration of social support strategies to facilitate care access and to improve quality of care.

The positive relationship of treatment utilization with drinking levels is self-evident: the more alcohol is used, the greater odds that individuals will seek help for their AUD. The presence of depressive symptoms appears to play no important role in alcohol treatment

utilization among HIV-infected women in this study. Women with depression may lack the energy or desire to seek care for drinking problems, which may explain the direction of effect found in the analysis. On the other hand, depressed women may seek care for their depressive symptoms, in which they may also receive screening or advice about their drinking problems (Dawson et al., 2012). Both mechanisms may counterbalance each other, resulting in our finding of no effect. Future research should assess whether receiving treatment for depression increases the likelihood of seeking alcohol treatment, particularly since depression and hazardous drinking frequently co-occur among individuals with HIV infection.

In multivariable analyses controlling for predisposing, enabling and levels of alcohol consumption, recent illicit drug use predicted the utilization of alcohol treatment. This positive association is consistent with prior research that illicit drug use is positively associated with care-seeking behaviors (Cohen et al., 2007, Dawson et al., 2012, D. S. Hasin, 1994, Ilgen et al., 2011 and Mojtai, Olfson, & Mechanic, 2002). Cohen and colleagues (2007) suggested that comorbid substance use disorders had strong influence on alcohol treatment utilization. In the current study, co-occurring drug use was reported by more than two thirds of the sample and may result in greater distress experienced by HIV-positive women, increasing their motivation to seek care for drinking problems. Increased outreach to those with both alcohol and drug use problems could help target the population with the most need for treatment.

This study has several limitations. First, our findings of predictors of utilization of alcohol treatment should not be interpreted as a causal link because of the cross-sectional study design. Second, the data on alcohol treatment utilization were based on self-report questions with unknown validity and reliability. Additionally, our measure of care did not allow us to distinguish participants with voluntary utilization from those with coerced utilization or to distinguish those who were unable to get care from those who never sought care. Third, the small number of respondents who reported recent treatment utilization precluded our analysis to identify meaningful factors associated with different types of alcohol treatment. Fourth, WIHS is a convenience sample but is representative of women with HIV in the US. WIHS women had semiannual visits with WIHS staff, which may influence hazardous drinkers' care seeking behaviors. Therefore, our results may not be generalizable to all HIV-infected women with drinking problems. Fifth, although the formal diagnosis of AUD is lacking for our sample, quantity and frequency questions of alcohol consumption have been widely used to identify people with drinking problems (Canagasaby & Vinson, 2005, Chung et al., 2012, Dawson, Grant, Stinson, & Zhou, 2005, Rubinsky, Dawson, Williams, Kivlahan, & Bradley, 2013 and Willenbring et al., 2009). In addition, we choose a higher cut-off point to define hazardous drinking, resulting in higher specificity in identifying subjects in need of treatment. Sixth, mental health disorders were not assessed in this study with the exception of depressive symptoms. Comorbid personality disorders and anxiety disorders may also play important roles in determining alcohol treatment utilization. Finally, the timeframe of the data collection is limited in this study. However, there have been few advances in the types of alcohol treatments, alcohol treatment utilizations since that time (Harris et al., 2012). Therefore, most of findings of the current study should be relevant today.

Despite the above limitations, this is the first study of which we are aware to examine predictors of utilization of alcohol treatment among HIV-positive women. Our findings provide a unique profile of HIV-infected women with hazardous drinking who received alcohol treatments. This information is important to improve the treatment service delivery to this population. Many HIV-infected women who do not receive care for their AUD can potentially benefit from engaging in alcohol treatment by improving outcomes across the entire HIV care cascade, including engagement in care, receipt of ART, adherence to therapy, and achieving viral suppression (Kyser et al., 2011 and Michel et al., 2010). Improved screening for at-risk drinking, referral to appropriate treatment, and integrating treatment procedures tailored to the unique contexts for HIV-infected women (e.g. combined treatment services to address drug and alcohol dependence, the availability of auxiliary services) could potentially help lessen the gap between need for and the utilization of alcohol treatment.

Acknowledgments

This work was supported by a grant from the National Institutes of Health (U01-AA020797). Data in this manuscript were collected by the Women's Interagency HIV Study (WIHS). The contents of this publication are solely the responsibility of the authors and do not represent the official views of the National Institutes of Health (NIH). WIHS (Principal Investigators): UAB-MS WIHS (Michael Saag, Mirjam-Colette Kempf, and Deborah Konkle-Parker), U01-AI-103401; Atlanta WIHS (Ighovwerha Ofotokun and Gina Wingood), U01-AI-103408; Bronx WIHS (Kathryn Anastos), U01-AI-035004; Brooklyn WIHS (Howard Minkoff and Deborah Gustafson), U01-AI-031834; Chicago WIHS (Mardge Cohen), U01-AI-034993; Metropolitan Washington WIHS (Mary Young), U01-AI-034994; Miami WIHS (Margaret Fischl and Lisa Metsch), U01-AI-103397; UNC WIHS (Adaora Adimora), U01-AI-103390; Connie Wofsy Women's HIV Study, Northern California (Ruth Greenblatt, Bradley Aouizerat, and Phyllis Tien), U01-AI-034989; WIHS Data Management and Analysis Center (Stephen Gange and Elizabeth Golub), U01-AI-042590; Southern California WIHS (Alexandra Levine and Marek Nowicki), U01-HD-032632 (WIHS I – WIHS IV). The WIHS is funded primarily by the National Institute of Allergy and Infectious Diseases (NIAID), with additional co-funding from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), the National Cancer Institute (NCI), the National Institute on Drug Abuse (NIDA), and the National Institute on Mental Health (NIMH). Targeted supplemental funding for specific projects is also provided by the National Institute of Dental and Craniofacial Research (NIDCR), the National Institute on Alcohol Abuse and Alcoholism (NIAAA), the National Institute on Deafness and other Communication Disorders (NIDCD), and the NIH Office of Research on Women's Health. WIHS data collection is also supported by UL1-TR000004 (UCSF CTSA) and UL1-TR000454 (Atlanta CTSA).

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Highlight

- Less than one in five HIV+ women with hazardous drinking reported recent use of any alcohol treatment.
- Half of HIV+ women receiving any alcohol treatment reported receiving multiple treatment services among which Alcoholic Anonymous (AA) was the most common.
- A mixture of factors (income levels, social support, drinking levels, and drug use) was important in explaining utilization of alcohol treatment among HIV+ women with hazardous drinking.

Table 1

Characteristics of 474 HIV-positive WIHS women with recent hazardous drinking (in the past 6 months)

Characteristics	All (n=474) %
Predisposing	
Age (years)	
18–35	31.2
36–42	38.2
43+	30.6
Race/ethnicity	
Black non-Hispanic	68.6
Hispanic any race	16.7
White non-Hispanic/other	14.8
Education	
<=High school	76.8
>=College	23.2
Marital status	
Married/cohabitating	30.2
Single/never married	69.8
Enabling	
Income	
<=12K	73.2
>12K	26.8
Employed	14.4
Any health insurance	75.7
Social support	60.4
Need	
Number of drinks per week	
36+	23.4
16–35	50.8
12–15	25.7
Depression (CES-D>=16)	67.2
Any drug use	71.9
Quality of life (mean, SD)	58.0 (20.2)
HCV	59.8
Undetected HIV viral load	9.1
CD4>200 cells /mm ³	77.7

Table 2

Recent alcohol treatment services utilization among HIV-positive women with hazardous drinking

Type of alcohol treatment services	All (n=474) %	Formal sources of care (n=65) %	Informal sources of care only (n=25) %
Any alcohol treatment service ^a	19.0		
Formal sources of care (inpatient detox or outpatient alcohol treatment) ^b	13.7	100.0	0.0
Informal sources of care only (AA, halfway houses, etc)	5.3	0.0	100.0
Inpatient alcohol detoxification	9.9	72.3 ^c	0.0
Outpatient alcohol treatment program	7.0	50.8	0.0
Alcoholic Anonymous (AA)	12.9	61.5	84.0
Other (halfway houses, etc.)	4.2	20.0	28.0

^a Any alcohol treatment used in the past 6 months includes uptake of any formal (inpatient detoxification, outpatient alcohol treatment, etc.) or informal sources of care for alcohol problems (Alcoholic Anonymous, halfway house, etc.).

^b Irrespective of whether also used any informal sources of care

^c Do not add up to 100% because some women used multiple sources of treatment

Table 3
Correlates of using any alcohol treatment among HIV-positive WIHS women with hazardous drinking (n=474)

Multivariable analyses				
Characteristics	Treated (n=90) %	Untreated (n=384) %	OR	95% CI P value
Predisposing				
Age (years)				
18–35	21.6	78.4	1.72	0.91 – 3.13 0.09
36–42	19.9	80.1	1.47	0.80 – 2.71 0.22
43+	15.2	84.8	1.00	
Race/ethnicity				
Black non-Hispanic	17.8	82.2	0.66	0.34 – 1.29 0.22
Hispanic any race	20.2	79.8	0.89	0.39 – 2.06 0.79
White non-Hispanic/other	22.9	77.1	1.00	
Education				
<=High school	19.2	80.8		
>=College	18.2	81.8		
Marital status				
Married/cohabitating	17.3	82.7		
Single/never married	19.3	80.7		
Enabling				
Income				
<=12K	22.0	78.0	3.10	1.53 – 6.27 <0.01
>12K	9.2	90.8	1.00	
Employment				
Yes	20.7	79.3		
No	8.8	91.2		
Any health insurance				
Yes	18.3	81.7		
No	21.0	79.0		
Social support				

Multivariable analyses					
Characteristics	Treated (n=90) %	Untreated (n=384) %	OR	95% CI	P value
Yes	21.1	78.9	1.68	1.00 – 2.83	0.05
No	15.2	84.8	1.00		
Need					
Number of drinks per week					
36+	28.8	71.2	4.41	2.03 – 9.59	<0.01
16–35	19.9	80.1	3.02	1.47 – 6.21	<0.01
12–15	8.2	91.8	1.00		
Depression (CES-D $\geq$ 16)					
Yes	18.2	81.8			
No	20.0	80.0			
Any drug use					
Yes	22.9	77.1	2.77	1.44 – 5.34	<0.01
No	9.0	91.0	1.00		
Quality of life (mean, SD)	57.4 (20.9)	58.2 (20.2)			
HCV					
Yes	20.4	79.6			
No	17.0	83.0			
Undetected HIV viral load					
Yes	21.9	78.1			
No	19.5	80.5			
CD4>200 cells/mm ³					
Yes	19.3	80.7			
No	18.8	81.2			

OR: Odds Ratio; 95% CI: 95% Confidence Interval