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Alcohol Use, Depressive Symptoms and the Receipt of Antiretroviral Therapy in Southwest Uganda

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Abstract

Alcohol use and depressive symptoms are associated with reduced access to antiretroviral therapy (ART) in the developed world. Whether alcohol use and depressive symptoms limit access to ART in resource-limited settings is unknown. This cross-sectional study examined the association between alcohol use, depressive symptoms and the receipt of ART among randomly selected HIV-positive persons presenting for primary health care services at an outpatient HIV clinic in Uganda. Depressive symptoms were defined by the Hopkins Symptom Checklist and alcohol use was measured through frequency of consumption questions. Antiretroviral use was assessed using a standardized survey and confirmed by medical record review. Predictors of ART use were determined via logistic regression. Among 421 HIV-infected patients, factors associated with the receipt of ART were having at least primary education, having an opportunistic infection in the last 3 months, and not drinking within the last year.

Keywords

Antiretroviral therapy; Alcohol use; Depression; Africa; Access to care

Introduction

Access to HIV antiretroviral treatment is rapidly expanding in Africa. Uganda is scaling up of antiretroviral therapy (ART) through several national and international programs, where 2,500 people were initiating ART each month, and 67,369 people were receiving HIV antiretroviral therapy out of the estimated 148,000 people needing treatment in 2005 (WHO 2006).

The national adult HIV prevalence in Uganda was estimated at 6.7% [5.7–7.6] in 2005 (UNAIDS 2006). The epidemic in Uganda experienced a marked decline in the late 1990s due to changes in the sexual behavior of young men and women in urban settings. National HIV prevalence and incidence rates have been stable for the last several years, although rates have varied between districts. In 2003, the Ugandan Ministry of Health reported an HIV prevalence of 10.8% among antenatal clinic attendees in the Mbarara District in Southwest Uganda. Despite regional variations, a stabilized national epidemic is expected to continue (UNAIDS 2006), which means hundreds of thousands of Ugandans will require antiretroviral treatment in the coming years.

Barriers to the receipt of ART in resource-limited settings in the context of rapid scale-up are largely unknown. The identification of barriers related to medical service utilization is important to ensure the equitable distribution and clinical success of ART programs. Alcohol use and depressive symptoms are common among HIV positive persons in Uganda (Kaharuza et al. 2006; Mbulaiteye et al. 2000), and are well-established co-morbid syndromes (Sullivan et al. 2005). They are also important predictors of delayed uptake of ART for medically eligible HIV + individuals in resource-rich settings (Loughlin et al. 2004; Maisels et al. 2001).

Failure to receive and adhere to ART among depressed or alcohol-using individuals may be due to several reasons. Alcohol use is associated with inefficient patterns of health care utilization, including lower rates of outpatient service use (Alexandre et al. 2001; Cunningham 2006; Masson et al. 2004). Alcohol consumption was identified as an important barrier to treatment uptake among marginalized Aboriginal people living with HIV in Western Australia (Newman et al. 2007). It is also a common reason for a provider to delay treatment due to concerns of non-adherence (McNaghten et al. 2003). Depression is associated with delayed ART use in resource rich settings where ART is plentiful (Fairfield et al. 1999). This may be due to a lower functional status that limits the ability to participate in long term health care (Wells et al. 1989), more chaotic health care use (Joyce et al. 2005), decreased motivation to accept therapy (Maisels et al. 2001), or provider concerns about decreased adherence (Fairfield et al. 1999). The relationship between depression and ART uptake may also operate in the opposite direction in resource-limited settings where limited treatment access may contribute to depression.

The Ugandan National Antiretroviral Treatment and Care Guidelines for Adults and Children recommends the assessment of various adherence factors, such as social support, willingness to participate in antiretroviral educational sessions, financial barriers, and psychosocial factors, such as depression (Ministry of Health, Republic of Uganda 2003). However, substance abuse, including alcohol use, is not included in the Ugandan National Guidelines.

Given the limited access to antiretroviral treatment in Uganda to date, there is no data on the relationship between these psychosocial factors and the receipt of antiretroviral treatment. As access to ART expands in Uganda, it is important to monitor who is gaining access to treatment to ensure the equitable distribution and clinical success of ART programs.

We set out to determine the prevalence of alcohol use and depressive symptoms among HIV positive persons seeking primary health care services in Uganda and to assess whether these factors were associated with the receipt of ART.

Methods

Study Population

We conducted a cross-sectional study of the psychosocial factors associated with antiretroviral use at the Mbarara University of Science and Technology Immune Suppression Syndrome (ISS) Clinic in Southwestern Uganda. The ISS Clinic is part of the Mbarara University Teaching Hospital located in the town of Mbarara in rural southwest Uganda. The ISS Clinic has over 11,000 HIV + patients, of whom just over 3,000 have received ART. This study was conducted between January and May of 2005. During this time, patients of the clinic were required to pay for laboratory monitoring, while physician consultation was provided free of charge. The Clinic enrolled 75 new patients per month with a range of 185–250 patient visits per week. Free ART was available through the Ministry of Health and PEPFAR. Eligible patients could also receive antiretroviral treatment through self-payment. Participants were eligible to participate in the study if they were at least 18 years of age, self-reported HIV positive and provided informed consent. Every fifth person signing into the clinic each day was selected and approached (the first number was randomly selected by a computerized random number generator). Information on demographics, household characteristics, self-reported illnesses, history of use of ART, alcohol use and depressive symptoms were collected through a face-to-face interview. Biomedical data and confirmation of the receipt of ART was obtained through a medical chart review. A single trained research assistant, a member of the local community who spoke both the local and national language, was responsible for recruiting and interviewing study participants.

Measures

Depressive Symptoms—Depressive symptoms were assessed with the depression section of the Hopkins Symptoms Checklist (DSHSCL). The DSHSCL is a 15-item Likert scale that measures symptoms of depression according to the criteria set by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). The DSHSCL has been used extensively worldwide in a variety of populations, including refugees (Mollica et al. 1987), migrants (McKelvey et al. 1993a, b; Mouanoutoua and Brown 1995), and HIV-positive persons in Africa (Kaaya et al. 2002), including Southwestern Uganda (Bolton 2001). The DSHSCL has been shown to be valid, reliable, and culturally relevant in these settings (Harvard Program in Refugee Trauma). We used a modified version of the DSHSCL as suggested by Bolton which contains an additional item, “Feeling like I don’t care about my health” to increase construct validity in this population (Bolton and Ndogoni 2001). Each person’s score is calculated by adding the responses to individual items and dividing by the total number of items. Individuals who scored above the standard cut-off of 1.75 were classified as having depressive symptoms. Evidence suggests that the somatic measures in depression diagnostics may inflate depression scores among persons with HIV infection (Kalichman et al. 1995), and it has, therefore, been suggested that such somatic measures be removed to prevent the overestimation of depressive symptoms among this population (Kalichman et al. 2000). Hence, in this study we included only the affective

measures of the DSHSCL when calculating the score and categorizing those as having or not having depressive symptoms. Scale items excluded from the calculation of the depression score were “feeling low in energy, slowed down”, “feeling figety”, “poor appetite” and “having difficulty falling or staying asleep”. The Cronbach’s alpha for the DSHSCL (affective measures only) was .744. This is an acceptable alpha level and comparable to the reliability results of other studies.

Alcohol Use—Alcohol consumption was assessed for lifetime, prior year, the number of days alcohol was consumed in the last 30 days, and the number of days the participant reported intoxication due to alcohol in the last 30 days. These measures have been used to avoid problems associated with customary consumption of non-standard alcohol volumes and concentrations in African settings (Fritz et al. 2002). Alcohol related problems were also measured using the Alcohol Use Identification Disorders Test (AUDIT). The AUDIT is a 10-item screening tool for early detection of hazardous drinking and related problems, including adverse psychological reactions (Babor et al. 1992), and can be used to detect alcohol abuse and dependence with a high degree of accuracy (Saunders et al. 1993). We used the standard cut-off of 8+ points as a positive indication of hazardous drinking (Babor et al. 2001). The Cronbach’s alpha for the AUDIT was .707.

Receipt of Antiretroviral Therapy and HIV Stage—The receipt of ART was confirmed by medical record review. Participants were considered to be receiving ART if prescription of antiretroviral medication was documented in their medical record at their last clinic appointment. WHO Stage of Disease and, when available, CD4 count were obtained through the medical chart review.

Other Independent Measures—Information on demographics, personal and household economics, household characteristics, perceived social support, self-reported health status and history of antiretroviral medication use was obtained. Subjects were asked if they had ever been told by a doctor to take antiretroviral medication and if they had ever taken antiretroviral medication regardless. Perceived social support was measured using the Oslo Support Scale.

The interview, consent and screener forms were all translated into the local language, Ruyankole, and back-translated to English to confirm the accuracy of the translation.

Analysis

Frequencies and percentages were used to provide a descriptive summary of the sample and determine the point prevalences for alcohol use and depressive symptoms. We excluded observations that were missing answers to critical questions, such as receipt of ART, alcohol use, or the presence of depressive symptoms from all analyses. We conducted analyses to examine the associations between depression and alcohol use and receipt of ART, and limited these analyses to the subset of patients who were diagnosed with WHO Stage III or IV HIV disease. We conducted bivariate analysis using the chi-square (χ^2) test of independence with a significance level of 0.05, using the Yates Continuity Correction when indicated. The Mann–Whitney Test was used for examining associations between categorical and continuous variables. All p-values are two-tailed.

We conducted multivariable logistic regression to examine independent associations with receipt of ART. We included variables that were statistically significant in bivariate ($P < .05$) analysis in the logistic regression model, while gender and depressive symptoms were forced into the regression model. We calculated ninety-five percent confidence intervals (CI) for the adjusted odds ratios (OR) for each variable. Correlations between independent

covariates were checked to ensure the assumption of multicollinearity was not violated. Cronbach's alphas were calculated for the standard assessments using the Reliability Scales tests. SPSS version 12.0.1 was used for all analyses.

Results

Sample Characteristics

Four hundred and thirty-two people were enrolled into the study. Every person who was approached for participation agreed to participate and provided informed consent. Eleven subjects (2.5%) were excluded from analysis because of missing data. Results are based on the remaining 421 participants.

Sample demographic and clinical characteristics are summarized in Table 1. The sample was largely female, Protestant, and resided locally in Mbarara District, and the median age of the study participants was 36 years (IQR 31–42 years of age). Farming was the most common occupation at 22.3% while 26.6% were unemployed. The median household income in the last 30 days was US \$12.50 and is substantially lower than the median income in Uganda (\$30 USD/month). CD4 count was available for 202 participants and the median CD4 count was 218 cells/ μ l (IQR = 91–395 cells/ μ l). Three hundred persons (71.3%) of the total sample reported they had ever been told by a doctor to take antiretroviral medication.

Alcohol Use

Three hundred and eight (73%) subjects had used alcohol in their lifetime. Of those who had ever had a drink, 128 (41.6%) had consumed alcohol in the last year. Thirty-nine (12.7%) were identified as current (within the last 30 days) drinkers. The majority of current drinkers consumed bottled beer (75.6%), followed by waragi (bottled or home-brewed) (31.7%), and other home-brewed beverages (21.9%). Of those currently drinking, 15 (38.5%) claimed to have been intoxicated at least one day in the last 30 and the median number of days of drinking in the last 30 was 3 (IQR = 1–6.5). Among current drinkers, 6 (15.4%) identified as hazardous drinkers (8 on the AUDIT).

Depressive Symptoms

Seventy-nine (18.8%) participants were identified as having depressive symptoms. Two-hundred eighty-one participants (66.7%) responded “extremely” to the statement “Feeling like I don't care about my health”. Furthermore, 31 (7.4%) answered that they had suicidal thoughts “quite a bit” or “extremely” over the last week.

Associations Between Alcohol and Depression

Of the six hazardous drinkers, only two were checklist positive for depressive symptoms. There was no associations between either alcohol use in the last 30 days or in the last year and depressive symptoms.

Receipt of Antiretroviral Therapy

Among those in WHO Stage III and IV HIV disease, 202 (77.4%) claimed to have ever been told to take ART, 152 (58.2%) had ever taken ART and 149 (57.1%) were currently taking antiretroviral drugs. Frequency of type of antiretroviral prescribed is presented in Table 1. Fifty-two (34.9%) patients among those in WHO stages III and IV had initiated therapy within the last 6 months.

Of the 149 persons in WHO stages III & IV who were receiving ART, 32.2% (48) purchased ART for themselves and 31.5% (47) received it for free through the Ministry of

Health program, 28.9% (43) received free ART through an aid or research program, 10 (6.7%) purchased treatment with money from friends or family and 1 person was receiving therapy through their employer.

Associations with Receipt of ART

Characteristics associated with currently receiving ART included older age, having beyond primary education and higher income. Gender, depressive symptoms and perceived social support were not associated with the receipt of antiretroviral treatment (Table 2). While drinking alcohol in the last year was negatively associated with the receipt of ART, being a current drinker was negatively associated with the receipt of ART with borderline statistical significance. In multivariate analysis that controlled for WHO stage of disease, age, having beyond a primary education, not having an OI in the last 3 months and not drinking within the last year were independent predictors of receiving ART.

To further explore the relationship between alcohol use and receipt of ART, we conducted additional analyses of the associations between the ten individual AUDIT items and ART use. None of the individual items were associated with receipt of ART with the exception of “ever get concern from others”, which was associated with increase ART use. (62.7% vs. 49.1%; χ^2 (1, $n = 261$) = 4.29; $P < 0.05$).

Discussion

We found depressive symptoms were common among HIV positive persons seeking primary care services at a university hospital clinic in Southwest Uganda. Current alcohol use was infrequent, but past alcohol use and problems related to alcohol were quite common. A history of alcohol use in the last year was significantly associated with a lower odds of receiving ART, while depressive symptoms were not associated with receiving ART in bivariate or multivariate analysis.

Recent data suggests a high rate of depressive symptoms among HIV positive persons in Uganda. Kaharuza et al. identified a 47% prevalence rate of reported depressive symptoms among persons with HIV infection in Eastern Uganda (Kaharuza et al. 2006). A community-based survey in a high HIV prevalence area in Southwest Uganda found a 24.4% prevalence of depression (Bolton 2001). Our study identified a prevalence of depressive symptoms of 18.8% and a substantial proportion (7.4%) reported suicidal thoughts “quite a bit” or “extremely” suggesting severe depression in these individuals. These estimates are somewhat lower than rates of depression identified at other HIV primary care sites that showed prevalences of 26–35% (Olley et al. 2003; Sebit et al. 2002) in Africa and 33% in the US (Bing et al. 2001). Antelman and colleagues found that depressive symptoms were associated with higher rates of mortality among HIV + individuals (Antelman et al. 2007). These studies, however, used different scales to measure depression and did not exclude somatic measures in their assessments among HIV positive persons and may have therefore overestimated the prevalence of depressive symptoms. While depression may lead to poor ART uptake, it is also possible that limited access to ART could lead to depression in resource limited settings. Our data finding no association between depressive symptoms and ART use suggest that neither of these causal pathways were particularly strong in the sample we studied.

Current drinking, both non-hazardous and hazardous, was uncommon in this sample (7.8 and 1.4% respectively) and substantially lower than HIV + individuals in the US where 53% report recent alcohol use and 8% are heavy drinkers (Galvan et al. 2002). Uganda has the highest percapita consumption of alcohol in the world (WHO 2004), and available literature suggests that self-reported alcohol consumption is higher among HIV positive persons than

their seronegative counterparts (72% vs. 56%) (Mbulaiteye et al. 2000). Across Africa, however, reports of alcohol use among HIV positive persons show variable rates. Sebit et al. observed a prevalence of alcohol use/misuse among HIV positive adult outpatients in Zimbabwe of 24.3% (Sebit et al. 2003), while Shaffer et al. recorded 54% of both HIV positive and negative public clinic patients in Kenya as hazardous drinkers according to the AUDIT (Shaffer et al. 2004). Past alcohol use was more common than current use suggesting that participants may have decreased their level of alcohol consumption concurrent with entering medical care. While alcohol use was not considered a contraindication for ART, patients were counseled that heavy drinking could lead to incomplete adherence and ART treatment failure. Indeed, over a quarter of those who claimed they were no longer drinking said they stopped because a health worker told them to. Alternatively, counseling messages to reduce alcohol consumption may have introduced a strong social desirability bias and led to under-reporting of recent alcohol behavior. This possibility is supported by the association between ART use and the AUDIT item “ever get concern from others” in that counseling messages to reduce alcohol use may have both reduced patient report of alcohol consumption or possibly reduced alcohol consumption itself.

The Ugandan National Antiretroviral Treatment and Care Guidelines for Adults and Children recommends the assessment of various adherence factors to ART when deciding to initiate therapy. These adherence factors include social support, willingness to participate in antiretroviral education sessions, financial barriers and psychosocial factors, including depression. However, substance abuse of any kind, including alcohol use, is not included in these treatment guidelines. Depressive symptoms, however, were not associated with the receipt of ART while alcohol consumption in the last year was associated with the non-receipt of ART. Persons who did not have a drink in the last year were 2.3 times more likely to be receiving antiretroviral treatment. A possible explanation is that providers are concerned about maximizing the clinical impact of antiretroviral treatment select patients who are more likely to have positive clinical responses to initiate treatment.

This possibility of rationing ART is supported by the context by which antiretroviral treatment must necessarily be distributed in Uganda. Uganda is one of the few countries in the WHO 3 × 5 Initiative to reach its targets for treatment coverage, however, approximately half of those in need of treatment were not receiving treatment at the end of 2005 (WHO 2005). Therefore, until universal access is achieved, providers may behave more conservatively when deciding who would be a good candidate for the receipt of antiretroviral treatment.

There were several limitations to our studies. The clinic population we studied is not representative of the larger HIV + population in Uganda. Alcohol use may have been under-reported in a clinical context where ART is limited and alcohol use is described as a barrier to adherence. Also, a cross-sectional study design limits interpretations of causal inference.

Depressive symptoms are common among HIV positive persons seeking primary health care services for their infection in Southwest Uganda. Depression has been associated with a faster progression to AIDS (Antelman et al. 2007; Leserman 2003) and non-adherence to treatment regimens (Tucker et al. 2003). Providers in this setting should be aware of the prevalence of depressive symptoms so that appropriate care can be administered and the impact of depressive symptoms on ART adherence and disease progression in this setting needs to be further investigated. Reported alcohol use was low in this population, although a history of use is independently associated with not receiving ART. The impact of alcohol use on access to treatment needs to be further examined to ensure equitable distribution of treatment. As ART programs continue to expand in Africa, it is important to monitor and

explore the relationships between psychosocial correlates of health care seeking behaviors and clinician attitudes to better our understanding and ability to develop effective interventions to ensure widespread treatment access.

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Table 1Sample characteristics $N = 421$

Characteristics	Frequency n (%)
Demographics	
Gender	
Female	266 (63.2)
Beyond primary education	166 (39.4)
Marital status	
Married	189 (44.9)
Separated/Divorced	68 (16.2)
Widowed	144 (34.2)
Never married	20 (4.8)
Religion	
Protestant	226 (53.7)
Catholic	134 (31.8)
Muslim	38 (9.0)
WHO stage of disease	
I	17 (4)
II	56 (13.3)
III	197 (46.8)
IV	64 (15.2)
Individual antiretrovirals	
NRTIs	
Zidovudine	43 (21.4)
Stavudine	158 (78.6)
Lamivudine	188 (93.5)
Abacavir	1 (0.5)
Didanosine	1 (0.5)
NNRTIs	
Nevirapine	163 (81.1)
Efavirenz	38 (18.9)
PIs	
Lopinavir/ritonavir	1 (0.5)

Abbreviations: NRTIs = nucleoside reverse transcriptase inhibitors, NNRTIs = non-nucleoside reverse transcriptase inhibitors, PIs = protease inhibitors

Table 2

Adjusted and unadjusted odd ratios for receipt of antiretroviral therapy controlling for WHO stage of disease

Characteristic	Receiving ART (<i>n</i> = 149)	Not receiving ART (<i>n</i> = 112)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age (median, IQR)	37.0 years (33–43)	34.5 years (30–39.8)	1.05	1.04 (1.02–1.08)**
Sex				
Female	93 (62.4%)	73 (65.2%)	Reference	Reference (0.49–1.54)
Male	56 (37.6%)	39 (34.8%)	1.13	0.87 (0.68–1.88)
Household income in last 30 days in USD (median, IQR)	\$17.60 (5.9–58.8)	\$8.80 (0.60–23.5)	1.00	1.00 (1.00–1.00)**
Beyond primary education				
Yes	69 (46.3%)	31 (27.7%)	2.25	1.80 (1.33–3.81)**
No	80 (53.7%)	81 (72.3%)	Reference	Reference (1.06–3.05)*
15 days lying down because of illness				
Yes	23 (15.4%)	36 (32.1%)	2.60	1.68 (1.43–4.71)**
No	126 (84.6%)	76 (67.9%)	Reference	Reference (0.92–3.05)
Drink within last year				
Yes	33 (22.1%)	40 (35.7%)	Reference	Reference (1.30–3.98)**
No	116 (77.9%)	72 (64.3%)	1.95	2.27 (1.13–3.37)*
Depressive symptoms				
Yes	23 (15.4%)	27 (24.1%)	Reference	Reference (0.64–2.36)
No	126 (84.6%)	85 (75.9%)	1.74	1.22 (0.94–3.24)
OI in the last 3 months				
Yes	125 (83.9%)	107 (95.5%)	4.11	3.05 (1.52–11.14)**
No	24 (16.1%)	5 (4.5%)	Reference	Reference (1.22–7.60)*

Abbreviation: OI = opportunistic infection

* $P < 0.05$,** $P < 0.01$,*** $P < 0.001$