

Substance Use and Condom Use Among the HIV Population at Clínica de Familia La Romana, Dominican Republic

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The primary purpose of this cross-sectional investigation was to quantify illicit substance use among the HIV positive population at Clínica de Familia La Romana in the Dominican Republic. The secondary goal was to identify whether there exists a relationship between alcohol consumption and condom use. Of the 97 participants who were interviewed in the study, 49% self-reported alcohol or tobacco use in the last three months. Based on the calculated ASSIST risk score, 20% of participants were classified as “moderate” or “high risk,” requiring an intervention. Additionally, 51% of the sample reported having sexual intercourse in the last 30 days. Out of the 49 participants who were sexually active, 67% reported using a condom during their last sexual experience, 31% reported not using a condom and the remaining 2% declined to respond. Contrary to prior research, no association was found between alcohol consumption and unprotected sex at Clínica de Familia La Romana, possibly due to the low percentage of patients that report consuming alcohol frequently.

Introduction

The Caribbean has the second highest prevalence of human immunodeficiency virus (HIV) globally, after sub-Saharan Africa, with an adult prevalence of 1%.¹ Within the Caribbean, the Dominican Republic (DR) reports the second highest prevalence of HIV infection, following Haiti, estimated at 0.7% for those 15 to 49 years old.^{1,2} Still, the estimated number of new infections has decreased over the past years from 41,000 in 2003 to less than 1,000 in 2013.³ A major reason for this decline was the introduction of highly active antiretroviral treatment (HAART) in 2004.⁴

The primary mode of HIV transmission in the Dominican Republic is via heterosexual sexual intercourse.⁵ HIV transmission is most prevalent within certain regions of the DR, particularly those with high tourism, such as La Romana, Puerto Plata and Santo Domingo.⁶ A review of epidemiological studies suggests that HIV is prevalent in tourist areas due to the mixing of local population with outside carriers, commercial sex work heavy alcohol and illicit drug use.⁷

The primary narcotics used in the Caribbean are alcohol, marijuana and cocaine; the injection of drugs, such as heroin, remains rare.⁷ In contrast to the rest of the Caribbean, research has found drug abuse in the DR to be low, with the exception of alcohol.^{6,8} This finding is of particular importance for people living with HIV/AIDS (PLWHA) due to the impact of alcohol on HAART treatment and adherence. An overwhelming amount of research has found that alcohol consumption has deleterious effects on markers of immunological functioning and viral suppression.⁹⁻¹¹ Other research has found a significant association be-

tween alcohol and drug use and non-adherence to HAART therapy.^{12,13}

In a study by Harris et al. (2011), researchers investigated barriers to medical adherence in 300 HIV-infected individuals in the Dominican Republic. Researchers found that alcohol users were 2.5 times more likely (95% CI: 1.4-4.5) to be non-adherent to medical treatment compared to non-users.¹³ The benefits of high adherence rates are consistent across cultural settings and include increased immune response, lower rates of resistance and mortality and improved survival.¹³ Therefore, there are several significant health concerns associated with alcohol consumption and drug use among patients with HIV.

Another health concern associated with alcohol consumption is unprotected sex, particularly among PLWHA. Approximately 70% PLWHA remain sexually active after diagnosis and one-third of PLWHA engage in unprotected sex.^{14,15} Alcohol is a frequently implicated risk factor for unprotected sex, and alcohol consumption tends to be more prevalent among PLWHA than the general population.^{16,17} In a 2010 meta-analysis, Baliunas et al. found that those who consumed alcohol prior to or during sexual relations were at an 87% higher risk of acquiring HIV.¹⁸ In a literature review and meta-analysis of 27 relevant studies, Shuper et al. (2009) demonstrated that alcohol consumption in sexual contexts was significantly associated with unprotected sex among PLWHA.¹⁹

Most of the research on alcohol consumption and unprotected sex in the DR has revolved around sex worker populations because sex work is legal, and sex workers represent an especially vulnerable population. Research has found that drugs are used prior to sexual relations in

order to earn more money, even at the cost of having unprotected sex.²⁰ Research on alcohol consumption and risky sex among PLWHA who are not sex workers in the DR remains rare.

Substance use has not previously been quantified among HIV patients at Clínica de Familia La Romana (CFLR). Additionally, the association between alcohol consumption and unprotected sex has not been previously investigated. This study assessed both factors through interviews in order to achieve an understanding of alcohol and substance use within this population and to determine if certain subpopulations within the clinic are at higher risk for transmitting the virus.

Methods

PubMed and Google Scholar databases were queried for articles that had standardized questionnaires on substance use that were culturally relevant to the clinic's population. After extensive research, a substance abuse program protocol was obtained from the World Health Organization website. The manual explains how to implement the Alcohol, Smoking and Substance Involvement Screening Test ("ASSIST"), an eight-item questionnaire developed by an international group of addiction researchers and clinicians.²¹ The ASSIST questionnaire determines a risk score for each substance by assigning greater involvement, i.e. drinking daily versus monthly, with a higher risk score (see supplemental information for ASSIST questionnaire and scoring). Based on the risk score for each substance, participants are placed in either "low," "moderate" or "high risk" categories and assigned the appropriate intervention for that level of use (i.e., "no treatment," "brief intervention" or "referral to a specialist," respectively).

The ASSIST questionnaire is paired with a "Brief Intervention" (also from WHO), which contains detailed instructions on how health care workers can conduct an intervention for patients at

"moderate" to "high risk" for substance use.²¹ The brief intervention consists of: a feedback report card that lists health risks associated with chronic use for each substance; a self-help handout that provides participants with strategies to reduce substance use; and a motivational interviewing dialogue that enables the patient and health care worker to discuss triggers and build a support system for the patient. The World Health Organization translated the ASSIST manual and brief intervention to Spanish and has implemented both in cultural settings similar to those in the DR. The manual and intervention have proven to be effective at significantly reducing the ASSIST scores of patients compared to patients not receiving the intervention. Moreover, 80% of participants reported a desire to cut down on their substance use after receiving the brief intervention.²¹

The eight-item questionnaire was combined with a standard demographic information questionnaire and a sexual history questionnaire adapted from another study at the clinic. This three-part questionnaire was performed on a convenience sample of 100 patients in the HIV program at CFLR. The HIV program includes all patients with HIV except for sex workers, who are part of the women's program at the clinic. Only adults (18+) who could communicate in Spanish were entered into the study. Adult patients who were waiting for their doctors' appointments at CFLR were randomly sampled by asking every third participant whether they would like to participate in a brief questionnaire.

Patients who accepted were taken into a private consultation office where they were told that the study consisted of questions on: their demographic information; consumption of alcohol, tobacco, illicit drugs and prescription medications that may have been taken more frequently or in higher doses than prescribed; and their sexual history in terms of condom use. Participants were told that their responses would remain strictly confidential and would not affect their treatment at the clinic.

Table 1: Demographic Information

Category		Count	Percent
Sex	Female	50	52%
	Male	47	48%
Age	18-25	6	6%
	26-45	55	57%
	46-78	36	37%
Nationality	Dominican	82	85%
	Haitian	15	15%
Education	Primary	38	39%
	Secondary	38	39%
	University	7	7%
	None	14	14%
Employment	Unemployed	47	48%
	Salary	29	30%
	Private Business	21	22%
Civil Status	Single	40	41%
	Married	13	13%
	Divorced	7	7%
	Liberal Union	25	26%
	Stable Relationship	5	5%
	Second or Third Marriage	1	1%
	Widow	6	6%
Living Status	Alone	19	20%
	With Someone	78	80%
Sexual Orientation	Heterosexual	85	88%
	Homosexual	5	5%
	Asexual	6	6%
	Bisexual	1	1%
Religion	Catholic	30	31%
	Evangelical Christian	34	35%
	Pentecostal	10	10%
	Adventist	3	3%
	None	18	19%
	Other	2	2%

Additionally, they were informed that they could refuse to respond to any question and/or terminate their participation in the study at any point. Finally, participants were asked to give verbal consent if they agreed to enter the study.

A health care worker completed all questionnaires through a guided interview in Spanish to ensure that participants clearly understood the questions and could respond to the best of their ability. From the ASSIST questionnaire, the health care worker calculated the participant's risk score for each substance and offered a brief intervention for patients at "moderate" to "high risk" for substance use. If the participant accepted, s/he was given the feedback report card with her/his risk score and a list of health concerns associated with chronic use for each substance. For example, some of the listed health risks related to chronic alcohol consumption are memory loss, liver and pancreatic disease and compromised immune response. The risk score was used to start a discussion with the participant about her/his drug use.

The motivational interviewing phase of the intervention began by asking participants if they had experienced any of the health concerns listed in the feedback report card. The participant was then asked to

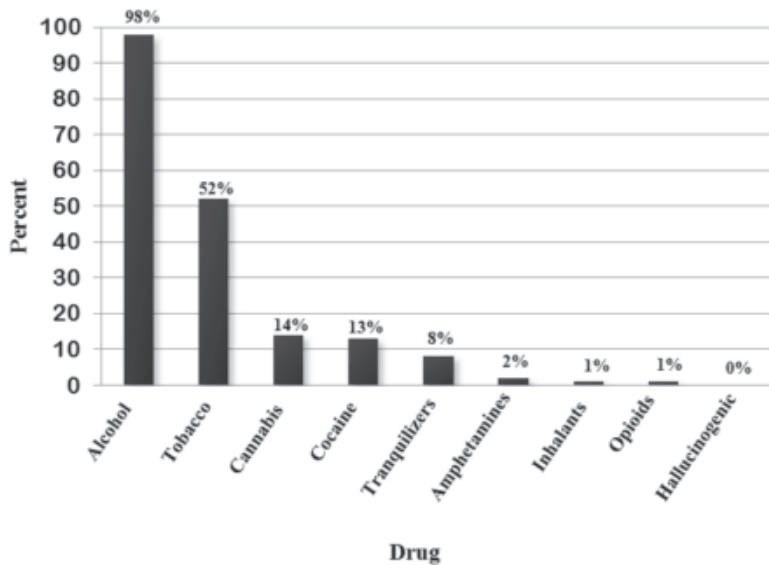


Figure 1. Substance Use At Least Once in Lifetime (Data from responses to Question 1 of the ASSIST questionnaire).

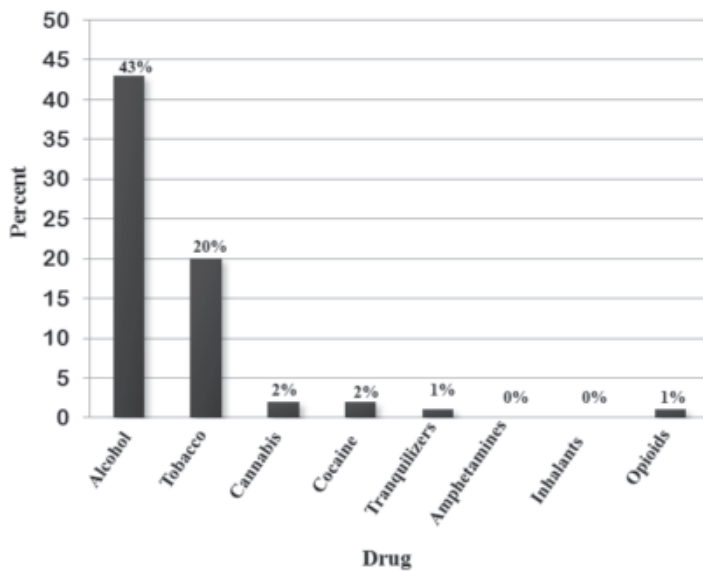


Figure 2. Substance Use in the Last Three Months (Data from responses to Question 2 of the ASSIST questionnaire).

reflect on the positive and negative effects of her/his substance use, if the negative effects outweighed the positive and if that reflection was enough to motivate them to quit. Then, the participant and health care worker constructed a support network that included family, friends and the clinic's psychologist. Those who wanted to reduce and eliminate their substance use were referred to the clinic's psychologist for continued motivational therapy. Participants who were hesitant to quit were reminded of the associated health risks and informed that the psychologist would always be a resource should they change their minds. For participants at high risk, the health care worker concluded the motivational interviewing phase by introducing participants to the clinic's psychologist to encourage follow-up treatment.

Results

Of the 100 patients interviewed, 97 completed the full questionnaire. Table 1 displays the results of the demographic information collected. In general, the study consisted of an approximately equal ratio of men to women (48% to 52%, respectively) and a mean age of 43

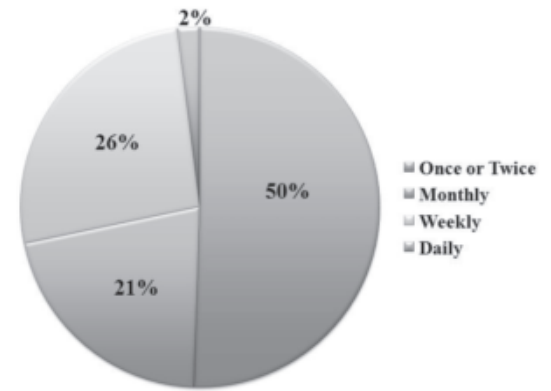


Figure 3. Frequency of Tobacco Use in the Last Three Months (Data from responses to Question 2 of the ASSIST questionnaire).

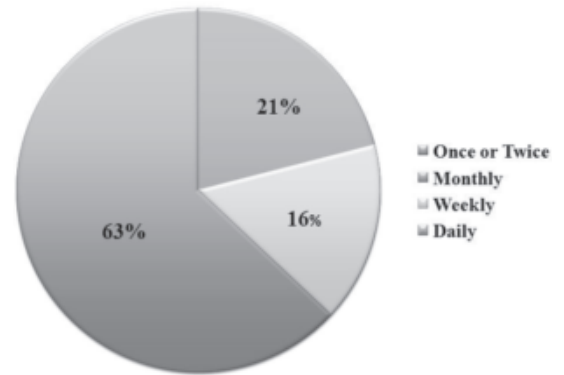


Figure 4. Frequency of Alcohol Use in the Last Three Months (Data from responses to Question 2 of the ASSIST questionnaire).

years. The sample consisted primarily of Dominican patients (85%) with 15% identifying as Haitian. Participants reported completion of either primary (39%) or secondary (39%) schooling and a substantial number were unemployed (48%). They identified predominantly as heterosexual (88%) and single (41%) but did not reside alone (80%). The majority of patients (81%) identified as religious, with 79% reporting Christianity as their religion.

The second part of the questionnaire quantified the amount of substance use in the sample. 99% of the study participants had used alcohol or tobacco at least once in the last 12 months. Figure 1 displays the amount of substance use for each drug used in the past 12 months. The most common drug used was alcohol (98%), followed by tobacco (52%). The other substances were used at lower rates and only in conjunction with alcohol or tobacco.

When asked about substance use in the last three months, 48 (49%) of the study participants reported using substances from once or twice to daily. Figure 2 displays the amount of substance use in the last three months. Again, alcohol was the most commonly used drug: 42 participants (43%) reported consuming alcohol in the last three months, while only 19 (20%) reported using tobacco; 4 participants (4%) reported using the remaining substances and consumed them rarely.

Figure 3 and 4 further examine the two most used substances, depicting the frequency of use in the last three months. Tobacco was used more frequently with 12 out of 19 participants (63%) reporting use on a daily basis, while alcohol was used less frequently with 30 out of 42 participants (71%) reporting use once or twice to monthly.

Of the 97 participants that completed the questionnaires, 19 (20%) qualified for an intervention. All but one patient agreed to the

intervention. Of the 19 that required an intervention, 12 (63%) required it for one substance, 5 (26%) required it for two substances and 2 (11%) required it for three substances. Despite having a greater number of alcohol users, only 6 out of the 42 participants (14%) that reported consuming alcohol in the last 3 months required an intervention for alcohol, whereas 18 out of 19 participants (95%) that reported tobacco use required an intervention for tobacco. 5 out of 6 participants that required an intervention for alcohol were also smokers. All participants that required an intervention for a drug other than alcohol or tobacco also required an intervention for alcohol and/or tobacco.

The third part of the questionnaire asked about sexual behavior and condom use. Of the 97 participants, 49 (51%) reported being sexually active (as defined by having sex in the last 30 days). Of those 49 participants, 33 (67%) reported using a condom during their last sexual encounter, whereas 15 (31%) reported not using a condom. The remaining participant (the last 2%) chose not to respond.

Alcohol use prior to or during sexual encounter was quantified. Of the 49 participants who were currently sexually active, 12 (24%) reported not consuming alcohol prior to or during their last sexual encounter, while the other 12 (24%) reported that they had. The remaining 25 participants (51%) had not consumed alcohol in the last 3 months. Of the 12 patients who had consumed alcohol in conjunction with sexual intercourse, 7 (58%) reported using a condom, whereas 4 (33%) had not used a condom; the final participant chose not to respond. As shown in Figure 5, the relative risk²² of unprotected sex for those who consumed alcohol was 1.45 times (95% CI 0.41-5.05) that of those who did not.

Discussion

The present cross-sectional investigation consisted of a three-part questionnaire that was implemented as an interview to quantify alcohol, tobacco and illicit substance use among patients in the HIV program at Clínica de Familia La Romana (CFLR). The results can be used to estimate the overall number of patients at CFLR who consume drugs and the frequency of their use. The findings suggest that alcohol and other substances are consumed at lower rates at CFLR compared to PLWHA populations in the Caribbean, the United States, and other regions of the DR.^{5,17,20,23}

There are several limitations in the design of the study that should be addressed. First, there is a reporting bias that is associated with questionnaire-type settings. The ways in which alcohol and other substances interact with the immune system and ART treatment had been explained to the patients at the clinic, and they were aware that they should not consume drugs while on anti-retroviral therapy. Therefore, when a healthcare worker asked about substance use, participants were likely to underreport use. Another potential outcome of a more knowledgeable population is a "healthier" population in which patients consume fewer drugs because they know that it negatively impacts their health. This might explain why there was a lower prevalence of reported alcohol and substance use at CFLR.

A second variable that may have influenced the amount of drug use is demographic factors. There was no association found at the 5% level of significance between substance use and several demographic factors, namely age, sex, education and religion. About half (49%) of the par-

ticipants reported having reduced their drug use after HIV diagnosis. Several participants attributed their low substance use to their religious beliefs. Although the information was not experimentally collected, the predominant explanation for this reduction in use was that patients joined a Christian church after diagnosis. Given that participants explained that their religious beliefs led them to lower or eliminate their use of alcohol and other substances, the potential function of religion as a protective factor merits further investigation. Results from the second part of the study found that approximately half (51%) of the population remained sexually active after diagnosis, a lower rate compared to previous literature reviews, such as Crepaz and Marks (2002), who found that 70% remain sexually active. Despite a lower rate of sexual activity, a third of the sample (31%) was engaging in unprotected sex, a finding that is consistent with other research findings.¹⁵ Once again, these results could have been affected by a reporting bias that would result in under-reporting sexual activity and over-reporting condom use.

The selection of the sample is another limiting factor that could have impacted the study's results. Participants were selected on a convenience basis: patients who were waiting for their doctors' appointments were asked if they would like to participate in the study. Only those who agreed to be interviewed entered into the study, giving rise to a

self-selection bias: patients who were more open to talk about their substance use and sexual history enrolled in the study, while those who were not, were excluded from the sample. This form of enrollment resulted in a relatively small sample size of 97 participants. A small sample size can give rise to doubt that the sample is reflective of the entire population. Therefore, the small sample is a significant weakness in the study that limits the validity of the data collected.

Research has found that drugs are used prior to sexual exploits in order to earn more money, even at the cost of having unprotected sex.

Contrary to prior research, there was no association between alcohol consumption and unprotected sex. The relative risk ratio found that unprotected sex was 1.45 times more likely when having consumed alcohol prior to or during sex. However, the confidence interval was broad (0.41 to 5.05), indicating that the finding was not significant, possibly because of the small sample size. Still, even with a larger sample unprotected sex and alcohol consumption may not be related in this population because of the small number of patients who reported drinking alcohol on a frequent basis.

Despite these limitations, the findings of this primary investigation of substance use at CFLR are important to gain a general idea of substance use among patients in similar populations worldwide. Additionally, the findings can be used to direct further investigations that might provide more concrete findings on substance use at CFLR and in other populations

Conclusion

The results from the study found that two major concerns persist within the targeted population: alcohol and other substance use and low condom use. Despite the relatively low frequency of alcohol and other substance use at CFLR, about half of the surveyed sample reported consuming alcohol in the last three months which can further compromise their immune system and potentially contribute to non-adherence. The importance of treatment adherence is clear in medical literature, yet it

Relative Risk		Used Condom		Total
		No	Yes	
Drank Alcohol Prior to or During Sex	Yes	4	7	11
	No	3	9	12
		7	16	23

Relative Risk = $\frac{\text{probability of event when exposed}}{\text{probability of event when not exposed}}$

$$RR = \frac{4/11}{3/12} = \frac{16}{11} = 1.45$$

$$\text{Confidence Interval} = \ln(1.45) \pm 1.96 \sqrt{\frac{(7/4)}{11} + \frac{(9/3)}{12}}$$

$$\text{Confidence Interval} = (0.41, 5.05)$$

Figure 3. Relative Risk of Consuming Alcohol Prior to or During Sex and Condom Use.

remains unknown whether alcohol and drugs directly impact patient adherence at CFLR. A follow-up study could investigate whether patients who received the intervention obtain a lower risk score on the ASSIST questionnaire compared to before the intervention and cross-analyze that data with biomarkers for adherence, such as viral load.

As stated earlier, the small sample size limits the validity of the data collected and whether it reflects the HIV population at CFLR as a whole. Despite this drawback, the study presents findings that deserve further investigation, namely the low frequency of alcohol consumption and lack of association between alcohol consumption and unprotected sex. Therefore, a repeated investigation that recruits a larger sample might lend more support to this finding and provide a concrete conclusion about whether alcohol consumption presupposes unprotected sex for the HIV population at CFLR.

Finally, it is concerning that a third of the population is engaging in unprotected sex despite their knowledge of HIV transmission. This study did not set out to investigate the factors that contribute to low condom use, so it would be of use to survey the population at CFLR and find out the reasons for low condom use.

In conclusion, the present investigation provided a preliminary investigation into substance use at Clínica de Familia La Romana. A substance abuse program was designed to ensure that doctors are aware of substance use among their patients, which will enable doctors and patients to better holistically understand demographic aspects that contribute

to patient health. In addition, a brief intervention program was incorporated into the clinic's setting so as to provide at-risk patients with the necessary resources to reduce and eliminate their substance use.

Supplemental Information

ASSIST questionnaire (v3.1) from the World Health Organization that quantifies substance use and categorizes patients as "low," "moderate" or "high risk" depending on the

patient's risk score as evaluated below. (Questionnaire was reformatted to fit on the page, but no content was altered).

The point of this preliminary investigation was to learn about integrating the World Health Organization's (WHO) substance use questions in the clinic's intake form in order to conduct a needs assessment, and to eventually design and adapt the WHO intervention program based on the results. This internal project required research to structure the inclusion of the substance use questions and to adapt them according to patients' needs. The goal is to replicate this study, expanding it based on our findings and submitting the study protocol to the appropriate ethics review committees, to conduct a needs assessment across a larger sample. Additionally, based on these initial findings it would be informative to investigate more in depth the factors that contribute to low condom use.

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The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST v3.1)

Clinician name: _____ Clinic: _____ Client ID or Name: _____ Date: _____

Introduction (please read to client or adapt for local circumstances)

The following questions ask about your experience of using alcohol, tobacco products and other drugs across your lifetime and in the past three months. These substances can be smoked, swallowed, snorted, inhaled or injected (show response card). Some of the substances listed may be prescribed by a doctor (like amphetamines, sedatives, pain medications). For this interview, we will **not** record medications that are used **as prescribed** by your doctor. However, if you have taken such medications for reasons **other** than prescription, or taken them more frequently or at higher doses than prescribed, please let me know. While we are also interested in knowing about your use of various illicit drugs, please be assured that information on such use will be treated as strictly confidential. Before asking questions, give ASSIST response card to client.

Question 1: In your life, which of the following substances have you ever used (non-medical use only)?		
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	No	Yes
b. Alcoholic beverages (beer, wine, spirits, etc.)	No	Yes
c. Cannabis (marijuana, pot, grass, hash, etc.)	No	Yes
d. Cocaine (coke, crack, etc.)	No	Yes
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	No	Yes
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	No	Yes
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	No	Yes
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	No	Yes
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	No	Yes
j. Other – specify: _____	No	Yes
Probe if all answers are negative: "Not even when you were in school?" If "No" to all items, stop interview.	If "Yes" to any of these items, ask Q2 for each substance ever used	

Question 2: In the past three months, how often have you used the substances you mentioned (first drug, second drug, etc.)?	Never	Once or twice	Monthly	Weekly	Daily or almost daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	2	3	4	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	2	3	4	6
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	2	3	4	6
d. Cocaine (coke, crack, etc.)	0	2	3	4	6
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	0	2	3	4	6
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	2	3	4	6
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	0	2	3	4	6
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	0	2	3	4	6
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	0	2	3	4	6
j. Other – specify: _____	0	2	3	4	6
If "Never" to all items in Q2, skip to Q6. If any substances in Q2 were used in the previous three months, continue with Questions 3, 4 & 5 for each substance used.					

Question 3: During the past three months, how often have you had a strong desire or urge to use (first drug, second drug, etc.)?	Never	Once or twice	Monthly	Weekly	Daily or almost daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	3	4	5	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	3	4	5	6
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	3	4	5	6
d. Cocaine (coke, crack, etc.)	0	3	4	5	6
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	0	3	4	5	6
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	3	4	5	6
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	0	3	4	5	6
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	0	3	4	5	6
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	0	3	4	5	6
j. Other – specify: _____	0	3	4	5	6

Question 4: During the past three months, how often has your use of (first drug, second drug, etc.) led to health, social, legal or financial problems?	Never	Once or twice	Monthly	Weekly	Daily or almost daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	4	5	6	7
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	4	5	6	7
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	4	5	6	7
d. Cocaine (coke, crack, etc.)	0	4	5	6	7
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	0	4	5	6	7
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	4	5	6	7
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	0	4	5	6	7
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	0	4	5	6	7
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	0	4	5	6	7
j. Other – specify: _____	0	4	5	6	7