

Patterns of Marijuana Use Among Patients With HIV/AIDS Followed in a Public Health Care Setting

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Objectives: To examine prevalence and patterns of smoked marijuana and perceived benefit and to assess demographic and clinical factors associated with marijuana use among HIV patients in a public health care setting.

Methods: Participants (n = 252) were recruited via consecutive sampling in public health care clinics. Structured interviews assessed patterns of recent marijuana use, including its perceived benefit for symptom relief. Associations between marijuana use and demographic and clinical variables were examined using univariate and multivariate regression analyses.

Results: Overall prevalence of smoked marijuana in the previous month was 23%. Reported benefits included relief of anxiety and/or depression (57%), improved appetite (53%), increased pleasure (33%), and relief of pain (28%). Recent use of marijuana was positively associated with severe nausea (odds ratio [OR] = 4.0, $P = 0.004$) and recent use of alcohol (OR = 7.5, $P < 0.001$) and negatively associated with being Latino (OR = 0.07, $P < 0.001$). No associations between marijuana use and pain symptoms were observed.

Conclusions: The findings suggest that providers be advised to assess routinely and better understand patients' "indications" for self-administration of cannabis. Given the estimated prevalence, more formal characterization of the patterns and impact of cannabis use to alleviate HIV-associated symptoms is warranted. Clinical trials of smoked and noncombustible marijuana are needed to determine the role of cannabinoids as a class of agents with potential to improve quality of life and health care outcomes among patients with HIV/AIDS.

Key Words: HIV, marijuana, medical marijuana, cannabis, drug use, nausea, depression, anxiety, complementary/alternative health

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The therapeutic properties of *Cannabis sativa*, a botanical agent more commonly known as marijuana, have been well established.^{1–8} For instance, marijuana has been shown to reduce nausea and vomiting and to increase appetite in patients debilitated by AIDS and cancer or in patients who suffer effects of potent cytotoxic or antiretroviral treatments.^{1,2,5,6} Despite its documented antiemetic, antispasmodic, and appetite-stimulating effects, use of marijuana as medicine remains controversial. Putative adverse effects from smoked cannabis such as impaired immunity, pulmonary infection, and other respiratory disease have impeded efforts to establish its safety and efficacy as a therapeutic agent.^{4,9,10} US federal drug policies further restrict scientific investigation of this schedule I controlled substance.

Recent advances in the biology of endocannabinoids have generated increased interest in the use of cannabinoids as a new class of therapeutic agents.^{7,9,11,12} According to the literature, management of HIV-associated symptoms is one of the most common applications ascribed to medical marijuana.^{3,9,12–16} Yet, few studies have characterized the extent of cannabis use by HIV patients, and fewer have assessed its use for medical benefit to address HIV-related symptoms. Anecdotal notoriety and recent legislative efforts to support legalization of cannabis as a botanical remedy for patients with chronic diseases suggest the need for more precise understanding of the typical patterns and determinants of marijuana use. Relevant to ongoing efforts to improve quality health care outcomes, better characterization of the epidemiology of cannabis use for relief of symptoms commonly associated with HIV/AIDS would provide meaningful information for clinicians and their patients.

METHODS

Participants and Procedures

Study personnel recruited eligible subjects through consecutive sampling procedures at 3 public health clinics and a satellite office of the San Mateo County AIDS Program in northern California between January 2001 and June 2001. Patients were approached by a study interviewer in the waiting room or in the clinic area and invited to participate. Flyers at these sites also encouraged interested persons to contact interviewers by phone. All consent procedures and interviews took

place in private clinic exam rooms or in secluded office space. Participants were compensated \$20 for their time.

Eligible subjects were seropositive for HIV, at least 18 years of age, and without cognitive impairment that might hinder an effective interview. Persons who had entered a recovery program for substance abuse within previous 90 days were excluded and invited to recontact study personnel once out of the acute phase of their drug recovery program. Staff fluent in Spanish were available to ensure informed consent and to administer all study procedures in Spanish whenever preferred by study participants.

Study protocol and data collection materials were reviewed and approved by the Ethical Review Committee of the Mills-Peninsula Health Care District in San Mateo County, California. Additionally, a certificate of confidentiality was obtained from the National Institute on Drug Abuse (NIDA) to protect sensitive data as well as participants and research staff from subpoena and search and seizure of study materials by local, state, and federal law enforcement.

Assessments

Data were collected by administration of a 35- to 50-minute, face-to-face, semi-structured questionnaire and by review of patients' clinical records. Gender, age, and ethnicity were extracted from a self-administered patient intake form in each medical record that is updated annually. Laboratory test results extracted from clinical records included patients' 3 most recent T-lymphocyte subset counts (fluorescence activated cell sorting [FACS]) and HIV RNA load tests (version 1.5; Roche Amplicor). CD4 results were reviewed and classified for each participant into the following categories: at least 1 CD4 count ≤ 200 cells/mm³ or all CD4 counts > 200 cells/mm³. Current viral load suppression was defined on the basis of the most recent viral load test 50 copies/mL³. The questionnaire included antiretroviral treatment (ART) regimen and self-report of adherence in the 4 weeks preceding the interview. Prescription and indication for use of dronabinol (Marinol, Unimed Pharmaceuticals, Marietta, Georgia, USA) were also extracted from the medical record.

Mental health disorders and psychoactive medications prescribed for anxiety, insomnia, depression, schizophrenia, and other major psychiatric conditions were extracted from patients' medical records. Any patient whose history included a mental health diagnosis or who was prescribed psychiatric medication was classified for the purpose of this analysis as having a history of mental distress.

The Descriptor Differential Scale was adapted for self-assessment of a participant's physical pain.¹⁷ Patients were asked to rate the intensity of the average and worst pain experienced over the preceding 24 hours, 7 days, and 4 weeks on a scale from "1 = nothing" to "13 = extremely intense." Interviewers provided a visual continuum graphic from 1 to 13 to clarify the scale. Participants verbalized or pointed to their

level of pain intensity. Distribution along the pain scale allowed for 3 categories of recent pain intensity: "none," "moderate," and "severe."

To assess symptoms of nausea, participants were directed to rate severity for the previous 4 weeks from "0 = none" to "4 = moderately severe." In analysis, nausea is classified as "none," "moderate," and "severe."

Marijuana, Alcohol, and Other Substance Use

The questionnaire assessed use of marijuana in the participant's lifetime and in the 4 weeks preceding the interview. Patterns of current marijuana use were assessed by obtaining frequency, amount, and reason(s) for marijuana use. Open-ended questions allowed participants to detail quantity of marijuana consumption by weight (grams) or cost (dollars) for the month as well as by number of "hits," "bong hits," "joints," or cigarettes consumed on a typical day. Reasons for marijuana use were elicited by an open question: "Thinking about the past 4 weeks, please tell me the main reason that you smoked marijuana." Interviewers were trained to wait for the participant's first response and to code it according to the following list: 1 = to relieve anxiety or stress, 2 = to relieve pain in the legs, 3 = to relieve pain somewhere else (not the legs), 4 = to help with depression, 5 = to increase appetite or relieve nausea, 6 = for pleasure or to party, and 7 = some other reason (please specify). If a reason was not generated spontaneously, the participant was shown a card with these responses and asked to choose an answer that most closely fit his or her experience. For HIV-associated symptoms, subjective experience of improvement with use of marijuana was assessed using a Likert scale from "1 = not at all helpful" to "5 = very helpful." Subsequently, the interviewer solicited additional reasons for use and associated perceived benefits.

"Medical marijuana use" was defined in this analysis as the use of marijuana to relieve symptoms of nausea, anorexia, or pain as well as for relief from anxiety or depression while refraining from use of other illicit drugs. "Strict medical marijuana use" was defined as consumption only for purposes of nausea, anorexia, or pain. Patients who used marijuana for relief of mental distress or in combination with other illicit drugs were excluded from the group defined as "strict" users. Use of marijuana for "pleasure" or "to party" was excluded from both classifications of medical marijuana.

Frequency of alcohol use and typical quantity consumed (in alcohol units) in the previous 4 weeks were obtained, and perception of its effectiveness to alleviate HIV-associated symptoms was assessed. By combining frequency of use and average amount consumed on a typical day, an estimate of alcohol units consumed in the past 4 weeks was generated. The cutoff for heavy alcohol consumption followed the definition used by the National Institute on Alcohol Abuse and Alcoholism.¹⁸ Accordingly, more than 1 drink per day for women and

more than 2 drinks per day for men, on average, exceeded the upper limit for moderate drinking and was thus defined as “heavy” drinking.

Other illicit drug use in the previous month was determined by specifically asking about cocaine, heroin, amphetamines, hallucinogens, and club drugs and reasons for their use. For each type of substance used, respondents were asked if they sought to relieve common HIV symptoms, including depression and anxiety, and, if so, whether the drug was perceived to be beneficial. For the purpose of this analysis, “other illicit drugs” refer to heroin, cocaine, and amphetamines.

Statistical Analysis

Questionnaire data were entered and stored in a Microsoft Access database and then exported to SPSS 10.0 (SPSS, Chicago, IL) for statistical analyses. Univariate analyses included estimate of prevalence, odds ratio (OR), and 95% confidence interval (95% CI). Variables shown to be significant in the univariate analyses were applied to a multivariate logistic regression analysis to estimate the relative contribution of each risk factor to the outcome variable of marijuana use in the previous 4 weeks. Models were evaluated using a backward stepwise regression strategy. Variables were eliminated from the model if they did not achieve a significance level of $P \leq 0.05$.

RESULTS

During the 6-month recruitment period, 265 (76%) of approximately 350 active clinic patients were approached, and 252 (95%) of those approached consented to participate in the study. Males comprised the majority (74%) of participants. Mean age was 43 years old. Thirty-five percent of the sample identified themselves as African-American; 32% as white; 27% as Latino; and 6% as Asian, other, or mixed ethnicity. Fifty-four participants (21.4%) opted for the Spanish language interview. Comparison of the study sample with the active clinic population revealed no statistical differences based on factors of sex, age, and ethnicity.

Of the entire sample interviewed ($n = 252$), 185 (73%) were on ART (Table 1). Results of HIV RNA testing were available for 159 (86%) of the 185; 83 (52%) of the 159 had complete viral suppression.

A history of mental health disorder(s) was found in 112 participants (44.4%), and medications to treat anxiety, depression, schizophrenia, or sleep disorders were present in medical records of 76 participants (30.2%). Additional characteristics of the study population are summarized in Table 1.

Evidence of dronabinol use in the previous 4 weeks was present for 11 participants, and only 1 (9.1%) claimed it to be “not at all effective.” Seven dronabinol patients (63.6%) reported smoking marijuana in the same 4-week period, including the person who found the treatment ineffective. Stated an-

other way, 12% of recent marijuana smokers reported use of dronabinol in the previous 4 weeks.

One hundred six participants (42%) reported symptoms of nausea in the 4 weeks preceding the interview, and 22 (9%) indicated that nausea was a daily experience. Fifty-seven patients with nausea (54%) reported the severity of their nausea as moderate, severe, or extremely severe, and of these, 76.4% were on ART. Thirty-five percent of participants were classified with current pain as “severe.” Less than 20% reported no pain in the previous month.

Patterns of Marijuana, Alcohol, and Other Substance Use

Of 252 persons interviewed, 200 (79%) had smoked marijuana at least once in their lifetime and 58 (23%) reported use of marijuana in the previous 4 weeks (Fig. 1). Of the 51 recent marijuana smokers for whom data on quantity are available, 32 (62.7%) reported typical use in terms of “cigarettes” or “joints,” whereas 19 (35.8%) reported their use in numbers of “hits” or “bong hits.” On the days they smoked, 27% of marijuana users reported consuming 1 “joint,” 12% reported 2 cigarettes, 10% reported 3 cigarettes, and 14% reported 4 to 6 cigarettes per typical day; 20% reported 1 to 2 “hits,” 10% reported 3 to 4 hits, and 12% reported between 6 and 20 hits per typical smoking day.

Respondents cited multiple reasons for smoking marijuana. The most common reasons for recent marijuana use were to relieve stress, anxiety, or depression (33 participants [56.9%]); to improve appetite (30 participants [52.6%]); for pleasure (19 participants [33.3%]); and to relieve pain (16 participants [27.6%]). Of 58 participants who reported marijuana use in the previous 4 weeks, 26 (44.8%) met study criteria for “medical marijuana use” and 10 (17.2%) met criteria for “strict medical marijuana use” (Fig. 2).

One hundred respondents (39.7%) reported some use of alcohol in the last 4 weeks, of whom 81 (81.0%) were male and 19 (19.0%) were female (OR = 0.52, 95% CI: 0.3–0.96). Quantity and frequency data were available for 95 (95.0%) recent alcohol users, and among them, 13 (13.7%) met criteria for “heavy” alcohol use. Any alcohol use was 4 times more likely among recent marijuana users (OR = 4.0, 95% CI: 2.2–7.5) compared with those who did not use alcohol during the same period, but marijuana use was not associated specifically with heavy use of alcohol.

Among the 26 participants who reported use of illicit drugs other than marijuana in the previous 4 weeks, the most commonly reported drugs were powder/crack cocaine (17 participants [65.4%]), heroin (9 participants [34.6%]), and amphetamines (4 participants [15.4%]). Minimal use of hallucinogens ($n = 1$) and club drugs ($n = 2$) was reported in this economically disadvantaged population. Recent marijuana smokers were among 10 (38.5%) of those participants who used other illicit drugs, and 16 (61.5%) were nonmarijuana

TABLE 1. Characteristics of HIV Population Sample of Recent Marijuana Users Compared With Nonusers*

Variable	All Participants (n = 252)		Recent Marijuana Users (n = 58)		Recent Marijuana Users vs. Nonusers	
	n	(%)	n	(%)	OR	P
All	252		58	(23.0)		
Age at interview (n = 251)						
19–30	14	(5.6)	3	(5.2)	1.00	
31–40	86	(34.3)	17	(29.3)	1.46	ns
41–50	103	(41.0)	31	(53.4)	1.58	ns
51 and older	48	(19.1)	7	(12.1)	0.79	ns
Sex						
Female	66	(26.2)	12	(20.7)	1.00	
Male	186	(73.8)	46	(79.3)	1.48	ns
Interview language						
English	198	(78.6)	56	(96.3)	1.00	
Spanish	54	(21.4)	2	(3.7)	0.10	0.002
Ethnicity (n = 250)						
African American	87	(34.8)	19	(32.8)	1.00	
White	80	(31.7)	31	(53.4)	2.26	0.02
Latino	68	(27.2)	3	(5.2)	0.17	0.005
Asian	8	(3.2)	5	(8.6)	1.49	ns
History of mental health distress†						
No	119	(47.3)	23	(39.7)	1.00	
Yes	133	(52.8)	35	(60.3)	1.49	ns
Nausea						
None	146	(57.9)	23	(39.7)	1.00	
Moderate	49	(19.4)	12	(20.7)	1.73	ns
Severe	57	(22.6)	23	(39.7)	3.62	<0.001
Current pain						
None	46	(18.3)	6	(10.3)	1.00	
Moderate	118	(46.8)	27	(46.6)	1.98	ns
Severe	88	(34.9)	25	(43.1)	2.64	0.051
Recent alcohol use						
No	152	(60.3)	20	(34.5)	1.00	
Yes	100	(39.7)	38	(65.5)	4.05	<0.000
Recent hard drug use						
No	229	(90.9)	49	(84.5)	1.00	
Yes	23	(9.1)	9	(15.5)	2.36	0.060
Patients on ART						
No	67	(26.6)	15	(25.9)	1.00	
Yes	185	(73.4)	43	(74.1)	1.02	ns

*Recent is defined as occurring in the 4 weeks preceding the interview.

†Mental health distress was indicated when a patient's medical record documented medication prescribed for psychiatric problem or medical notes indicated a diagnosis of anxiety, depression, insomnia, or schizophrenia.

ns indicates not significant.

users. Participants who reported marijuana use in the last 4 weeks were nearly 2.5 times more likely to have also used other illicit drugs. Use of these substances comprised a relatively small number, however, and was of borderline significance (OR = 2.4, 95% CI: 0.97–5.78).

Factors Associated With Marijuana Use

Experience of moderate to severe nausea was strongly associated with recent marijuana use (OR = 3.1, 95% CI: 1.6–5.9) in the bivariate analysis. In contrast, patients with moder-

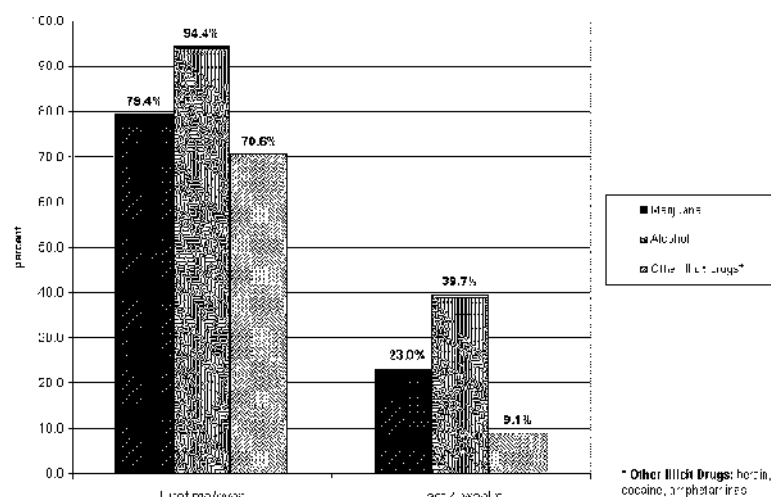


FIGURE 1. Marijuana, alcohol, and other drug use ever and in the last 4 weeks.

ate to severe pain did not use marijuana in greater proportion than those with no pain at all (OR = 1.6, 95% CI: 0.9–2.8).

When compared with all other ethnic groups, whites were more than 3 times as likely to have used marijuana recently (OR = 3.4, 95% CI: 1.85–6.25). Conversely, Latinos compared with all other groups were far less likely to have used marijuana (OR = 0.11, 95% CI: 0.03–0.36). Being interviewed in Spanish versus English confirmed the lower likelihood of recent marijuana use (OR = 0.10, 95% CI: 0.02–0.41). Men were no more likely to use marijuana than women. Age was not a significant factor, nor was having a CD4 count ≤ 200 cells/mm³. Recent use of marijuana was no more common for participants with full suppression of viral load than for those with a viral load above 50 copies/mL³. In the univariate analysis, no association between recent use of marijuana and history of mental health disorders was observed.

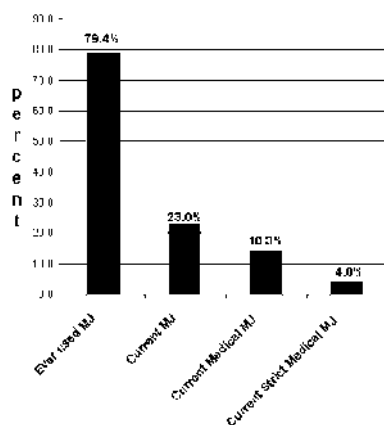


FIGURE 2. Marijuana (MJ), medical MJ, and strict medical MJ use in the last 4 weeks.

Factors significantly associated with recent marijuana use in the univariate analyses were further analyzed via logistic regression. The mental health variable was retained in the regression model as well, because relief from mental health problems was considered a primary benefit for most marijuana smokers. The initial model revealed significant associations with recent marijuana use for moderate nausea, recent alcohol use, and Latino ethnicity, controlling for other drug use, mental health history, current pain, and sex as common confounders (Table 2). A final model with only 3 variables remained after a backward step-wise regression procedure. It suggests that those who had moderate to severe nausea were 4 times more likely to have smoked marijuana in the previous month compared with those with no nausea. Those who consumed any alcohol recently were 7 times more likely to have used marijuana than non-drinkers. Finally, Latinos were less likely to be marijuana users compared with whites, African Americans, or Asians. Recent use of other illicit substances, although of borderline significance in the univariate analysis, was not a significant predictor of marijuana use in the regression model, nor was pain, mental distress, or gender.

DISCUSSION

Limited data are available pertaining to prevalence and usage patterns of smoked marijuana among patients with HIV/AIDS. Moreover, prior studies have predominantly surveyed patrons of cannabis buyer clubs^{13,16,19} and have relied on data collected by means of anonymous survey questionnaires.^{11,20,21} Only a small body of literature characterizes the extent and patterns of use among HIV-infected clinic outpatients.^{11,21–23}

Our findings revealed that most patients in this sample had smoked cannabis at least once in their lifetime and that nearly a quarter of patients reported use of marijuana in the

TABLE 2. Associations With Recent Use of Marijuana (Last 4 Weeks)

Variables	AOR	CI _{95%}
Ethnicity		
African American	1.00	
White	1.36	[0.61, 3.01]
Latino	.07	[0.02, 0.29]†
Asian	.91	[0.24, 3.41]
Nausea		
None	1.00	
Moderate	.88	[0.33, 2.33]
Severe	3.97	[1.55, 10.18]*
Current pain		
None	1.00	
Moderate	1.60	[0.50, 5.05]
Severe	1.56	[0.43, 5.64]
History of mental health distress‡		
No	1.00	
Yes	1.16	[0.56, 2.40]
Recent alcohol use		
No	1.00	
Yes	7.53	[3.39, 16.73]†
Recent hard drug use		
No	1.00	
Yes	1.03	[0.36, 3.01]

*Statistically significant at $P < 0.05$; †highly significant at $P < 0.001$.

‡Mental health distress was indicated when a patient's medical record documented medication prescribed for psychiatric problem, or medical notes indicated a diagnosis of anxiety, depression, insomnia, or schizophrenia.

AOR, adjusted odds ratio; CI_{95%}, 95% confidence interval.

past month. This is consistent with prior research reporting prevalence rates of cannabis use that primarily seem to fall between 25% and 37% in HIV/AIDS populations.^{13,15,16,24–27} Our findings contribute to the literature by providing confirmation of similar marijuana use rates among a large sample of HIV clinic patients through in-depth personal interviews.^{13,24–26,28}

The present study also collected data on patterns of marijuana use, which are not well documented in the current body of literature. Post hoc analysis indicates a problem with assessment of amounts and potency of marijuana used. This underscores the need to develop standardized tools to quantify marijuana consumption better. Nonetheless, it was determined that more than half of the smokers (56.8%) in this sample typically consumed no more than 1 cigarette or 4 hits of marijuana on days used. The few studies describing patterns of marijuana use among HIV-positive patients have used diverse methods of quantifying frequency of use and amounts used, making comparisons across studies difficult.^{11,22,29} More precise determination of cannabis use rates, route of administration, and

sources of procurement are needed to form a more complete understanding of the patterns and reasons for marijuana use among HIV patients who smoke marijuana.

Accurate assessment of marijuana use for medicinal purpose is often constrained by the difficulty of differentiating therapeutic use from recreational use. Consideration of marijuana use in combination with alcohol or illicit drugs is warranted. Relatively few data are available for alcohol and illicit drug use behaviors among cannabis users, with most reporting moderate to frequent use of other drugs, especially stimulants such as cocaine and methamphetamines.^{12,22} Our results show that cannabis smokers reported higher rates of any alcohol use in the prior 30 days in contrast to non-cannabis users; however, differentiating heavy alcohol use did not reveal a significant association with marijuana use. Self-reported illicit drug use among study participants in this sample revealed that only a small percentage of clinic patients were using other illicit substances such as heroin, stimulants, and designer drugs in the preceding 4-week period. In our sample, high rates of combined marijuana and alcohol use but relatively low rates of other drug use suggest that the majority of cannabis smokers in this sample were likely using marijuana for social and recreational reasons in addition to use for therapeutic benefit.

A substantial percentage of cannabis users viewed it as beneficial for relief of symptoms commonly associated with HIV/AIDS. Relief from anxiety and depression were among the most frequently reported reasons for smoking cannabis, followed by appetite stimulation and relief of nausea. Consistent with prior reports demonstrating the antiemetic effects of cannabis,^{1,2,5,6} our study revealed a strong association between recent use of marijuana and report of moderate to severe nausea symptoms. This corresponds with prior research on perceived benefits of marijuana, which has shown that most users smoke to alleviate nausea symptoms and to stimulate appetite.^{22,24,25,30,31} This finding is particularly relevant to issues of antiretroviral medication adherence. Nausea and anorexia are frequently cited as reasons for delayed or missed doses and discontinuation of ART.^{32–35}

Surprisingly, exploration of the possible associations between marijuana use and presence of pain revealed no significant relation. Limited studies have explored the use of cannabis by patients to manage pain symptoms. In a study by Ware et al³⁶ in 209 chronic non-cancer pain patients, 15% of participants reported that they used cannabis to manage their pain symptoms. Initial findings from cannabinoid research studies suggest that cannabinoids may possess analgesic properties; however, further evidence-based research is needed to establish the efficacy of marijuana for relief of pain.^{3,37}

Our finding that whites were significantly more likely to smoke marijuana in comparison to non-whites is particularly noteworthy considering the sizable representation of African American and Latino participants in our study sample. Prior research has demonstrated that whites turn to alternative medi-

cine treatments and therapies more often in comparison to other ethnic groups.^{38,39} Of significance, past surveys on the prevalence of marijuana use have sampled patient populations that are primarily male and white, and data on ethnic and gender differences are sparse.

Several study limitations should be noted. This study represents a convenience sample of people with HIV who access county-based health services. It is not a random sample of HIV patients from the broader population; hence, selection bias is expected. Results from this sample may not be easily generalized to other HIV populations. This ethnically and economically diverse sample, however, may offer new perspectives on marijuana use for medicinal benefit.

The fact that assessment tools only measured marijuana use in the past month did not permit examination of long-term patterns of drug use. Moreover, because of issues of legality, use of self-report measures may have contributed to underreporting marijuana and other illicit drug use behaviors among this sample. Reports showing that recall bias diminishes the reliability of self-report data beyond a 4-week period helps to justify use of the limited time frame; however, data on alcohol and drug use histories could have provided more substantive results.

An additional limitation is the cross-sectional research design, which constrains abilities to infer causal relations between variables. Furthermore, the results of this study would have been strengthened if a comparable HIV-negative clinic sample had been recruited to serve as a control group.

Despite these limitations, several strengths of this study deserve merit. The diversity of our patient sample was reflected in nearly equal proportions of African-Americans, whites, and Latinos; in addition, 80% of the Latino patients chose to be and were interviewed in Spanish. Furthermore, the information on use of smoked marijuana with concurrent alcohol and illicit drug use reported here adds considerable new detail to the literature on patterns of cannabis use among patients with HIV/AIDS. Finally, the population studied represents a broad-based sample of patients followed medically in a public health care setting.

CONCLUSIONS

The current study offers the largest systematic assessment of cannabis use among HIV clinic patients utilizing in-depth face-to-face interviews. Although reported findings are limited, several controlled trials document the benefits of cannabis for common symptoms of HIV and other chronic diseases such as nausea, weight loss, and emesis.^{2,4-8} Our findings indicate that a significant number of patients with HIV infection followed in a public health care setting used marijuana to help manage their symptoms, particularly moderate to severe nausea. In addition, recent alcohol use and white ethnicity were observed to be significantly associated with cannabis use. The high prevalence of marijuana use among HIV

patients suggests that providers be advised to assess routinely and better understand the indications used by patients for self-administration of cannabis. Exploration of factors such as frequency and amounts of use, reasons for use, and perceived benefits would further help to characterize patterns and effect of marijuana use on health outcomes of HIV-infected persons. Well-designed, population-based, prospective research is needed to characterize better the risks and benefits of marijuana use among people living with HIV/AIDS and other chronic diseases. Furthermore, aside from mitigating the controversy surrounding the use of marijuana as medicine, clinical trials of smoked and noncombustible forms of cannabis are needed to define the safety and efficacy of cannabinoids as a class of agents with potential to improve quality of life and health care outcomes of patients with chronic diseases.

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