

Cannabis Use by Persons Living with HIV/AIDS: Patterns and Prevalence of Use

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ABSTRACT. This study was undertaken to determine the prevalence of use, reasons for use, amounts and methods used, and perceived effectiveness of cannabis and dronabinol among persons living with HIV/AIDS in Canada.

Cross-sectional anonymous self-administered questionnaire study. Four hundred patients were consecutively recruited from 3 primary care HIV clinics in Toronto, Ottawa and Montreal, and 50 questionnaires were distributed to PHAs (persons having AIDS) at one “cannabis compassion club.”

Responses were received from 160 clinic patients and 19 compassion club patients (40% response rate). Of 160 PHAs attending the HIV clin-

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ics, 59 patients (37.3%, 95% CI 29.5-45.1%) reported current use of cannabis. Of 19 compassion club clients, all reported current use of cannabis. Cannabis was most commonly used for stress relief and loss of appetite in both populations, in addition to relief of stress and nausea. Side effects included "high" and dry mouth. Dronabinol and cannabis were also reported to relieve adverse effects of antiretroviral therapy. Dronabinol is less widely used, cannabis being preferred.

Cannabis is commonly used among PHAs for a wide range of symptom relief. Clinical trials using standardized material are required to assess the magnitude of the effects of cannabis, to explore the role of the placebo effect, and to define dose exposures for risk-benefit assessment. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2003 by The Haworth Press, Inc. All rights reserved.]

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INTRODUCTION

Cannabis sativa L. is widely used recreationally and therapeutically in Canada. It is estimated that 28% of the adult Canadian population has ever used cannabis recreationally (World Health Organization 1997). In a recent telephone survey of adults in 2508 Ontario households, 49 people (1.9%) reported using cannabis for a medical reason in the past year, especially pain or nausea, while 173 persons (6.8%) reported recent cannabis use for other reasons (Ogborne et al. 2000). Health Canada has initiated a programme of research to investigate claims of health benefits of cannabis use in a wide variety of diseases (Health Canada 1999). Within this programme, the Community Research Initiative of Toronto (CRIT) and the Canadian HIV Trials Network (CTN) have been asked to conduct a clinical trial of smoked cannabis use among persons living with HIV/AIDS (PHAs).

It has been estimated that between 15-33% of PHAs use cannabis for medical purposes in North America (Braitstein et al. 2001; Dansak 1997; Fairfield et al. 1998; Sidney 2001). Gastrointestinal symptoms (loss of appetite, nausea and vomiting, weight loss) are the most commonly reported reasons for use. However, data on the doses used, the methods of administration, and the frequency and duration of use are not well de-

scribed. In designing a clinical trial, such preliminary data would be useful in establishing a preliminary dosing schedule. Furthermore, PHAs should participate in the identification of clinical endpoints to ensure that the objectives of the trial are relevant to current community practice.

The main psychoactive component of cannabis, delta-9-tetrahydrocannabinol (THC), has been licensed as dronabinol (Marinol®) for appetite stimulation in PHAs with anorexia (Beal et al. 1997). Little is known of the perception of benefit of dronabinol among PHAs, but anecdotal reports suggest that some PHAs prefer smoked cannabis to dronabinol.

We have conducted a survey to describe the patterns and prevalence of cannabis and dronabinol use among PHAs in Canada.

METHODS

Following community consultations in Toronto and discussions with caregivers across Canada, we designed a 44-item questionnaire on cannabis use among PHAs. The first part of the questionnaire addressed the demographics of the respondent (age, gender), duration of HIV infection, and history of AIDS-defining illness. The second part of the questionnaire addressed patients' experience with dronabinol and cannabis, using identical questions in separate sections for each drug. Only those patients who reported ever having used either cannabis or dronabinol were asked to continue with the questions on those drugs. Questions included reasons for use, ratings of desired and unwanted effects, and reasons for stopping use. At the end of the questionnaire, respondents were asked about their preference for cannabis or dronabinol, and about their interest in participating in clinical trials of cannabis. The questionnaire took less than 15 minutes to complete. Ethics approval was obtained from the CRIT Ethics Review Board and from the Research Ethics Board of the Montreal General Hospital.

Four hundred questionnaires were distributed to patients attending primary care HIV clinics in Toronto, Ottawa and Montreal over a three-week period in mid-2000. A convenience sample of patients was selected by asking a clinic nurse at each site to hand the questionnaire to each consecutive patient entering the clinic during that period, regardless of reason for attendance, with a brief verbal description of the aims of the questionnaire. Patients were informed that their responses would be anonymous, and were asked to return completed forms to the data collection centre using the provided stamped addressed envelopes. A

covering letter accompanying the questionnaire contained a detailed description of the purpose and rationale for the study and a contact number for any questions. No financial incentive was offered. Patients were not asked to provide any information which could be used to identify them. In addition to the HIV clinics, 50 questionnaires were given to one cannabis compassion club for distribution to clients known to be HIV-positive.

Six months after the first questionnaire was handed out, the study was closed. One hundred and sixty responses were received from the HIV clinics at this time, and 19 responses were received from the compassion club, giving an overall response rate of 40%.

Data were entered at the Canadian HIV Trial Network data centre. Missing data were excluded from summary statistics. Categorical responses were summarized with 95% confidence intervals where appropriate. Ratings of drug effects were summarized as frequency distributions. Data analysis was carried out using SAS software.

RESULTS

Patient Demographics

The demographic characteristics of the 160 patients attending the HIV clinics (hereafter called the “clinic” population) and the 19 clients from the compassion club (hereafter called the “club” population) are shown (Table 1). The mean age of the clinic patients was 44.2 years (86.8% male) (range 24-72 years). The mean duration of HIV infection among clinic patients was 8.7 years, with 54 (33.8%) patients reporting having a history of an AIDS-defining illness. Seventy-four (46.3%) patients were cigarette smokers. One hundred forty-five (90.6%) patients reported that they were currently taking antiretroviral therapy.

The mean age of the 19 compassion club clients was 39.5 years (84.2% male) (range 29-51 years). The mean duration of HIV infection among club clients was 8.8 years, and 3 (15.8%) reported having progressed to AIDS. Twelve (63.2%) clients were cigarette smokers, and 16 (84.2%) reported current use of antiretroviral therapy.

HIV Clinic Patients

Prevalence of Cannabis and Dronabinol Use

Of 160 clinic patients, 102 (67.6%; 95% CI 60.1-75.1%) reported ever having used cannabis (Table 2). Fifty-nine patients (37.3%; 95%

TABLE 1. Demographic Characteristics of 160 Clinic and 19 Compassion Club PHAs

| Characteristic | Patient population | |
|---------------------------------------|---------------------|------------------------------|
| | Clinic (n = 160) | Compassion club (n = 19)* |
| Age (years) | | |
| < 40 | 60 (37.5%) | 10 (52.6%) |
| 40-49 | 63 (39.4%) | 8 (42.1%) |
| ≥ 50 | 37 (23.1%) | 1 (5.3%) |
| Sex | | |
| Male | 139 (86.8%) | 16 (84.2%) |
| Not available | 6 (3.9%) | 1 (5.3%) |
| HIV/AIDS status | | |
| Years since HIV positive | | |
| 0-4 | 37 (23.1%) | 3 (15.8%) |
| 5-9 | 58 (36.3%) | 8 (42.1%) |
| ≥ 10 | 65 (40.6%) | 8 (42.1%) |
| Clinical AIDS | | |
| Yes | 54 (33.8%) | 3 (15.8%) |
| Not available | 9 (5.6%) | - |
| Current tobacco smoking | | |
| Yes | 74 (46.3%) | 12 (63.2%) |
| Not available | 2 (1.2%) | - |
| Current antiretroviral therapy | | |
| Yes | 145 (90.6%) | 16 (84.2%) |
| Not available | 4 (2.5%) | - |

C.I 29.5-45.1%) reported current use of cannabis. Ninety-four patients (92% of ever users) reported ever having used cannabis solely for recreational purposes. Twenty-one patients (14.5%) reported having ever used dronabinol, of whom 10 continued to use dronabinol.

Reasons for Cannabis and Dronabinol Use

Symptom Relief

Of 102 patients who had ever used cannabis, stress relief and loss of appetite were the most common reasons for use (Table 3). The proportion of patients who reported strong or complete relief of their symptoms due to cannabis use is shown (Figure 1). The symptoms reported to be most strongly or completely improved by cannabis were loss of appetite, weight loss, stress, nausea and pain.

TABLE 2. Prevalence of Dronabinol and Cannabis Use Among 179 PHAs

| Experience with cannabinoids | Patient population | |
|------------------------------|---------------------|-----------------------------|
| | Clinic (n = 160) | Compassion Club (n = 19) |
| Cannabis | | |
| Ever used cannabis | 102 (67.6 ± 7.5%) | 19 (100%) |
| Recreational cannabis use | 94 (63.1 ± 7.7%) | 14 (73.7%) |
| Currently using cannabis | 59 (37.3 ± 7.8%) | 19 (100%) |
| Dronabinol | | |
| Ever used dronabinol | 21 (14.5 ± 5.7%) | 12 (63.2%) |
| Currently using dronabinol | 10 (6.3 ± 4.1%) | 2 (10.5%) |

TABLE 3. Prevalence of Symptoms for Which Cannabis and Dronabinol Are Used Among PHAs

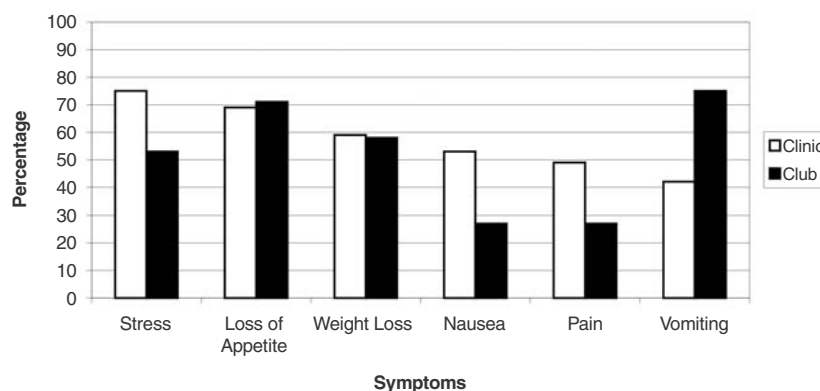
| Symptom | Population | | | |
|------------------|-----------------------|------------------------|----------------------|------------------------|
| | Clinic | | Club | |
| | Cannabis (n = 102) | Dronabinol (n = 21) | Cannabis (n = 19) | Dronabinol (n = 12) |
| Stress | 58 (57%) | 13 (62%) | 19 (100%) | 7 (58%) |
| Loss of appetite | 51 (50%) | 18 (86%) | 17 (89%) | 11 (92%) |
| Weight loss | 43 (42%) | 18 (86%) | 11 (58%) | 8 (67%) |
| Nausea | 42 (41%) | 16 (76%) | 14 (74%) | 9 (75%) |
| Pain | 36 (35%) | 10 (48%) | 11 (58%) | 6 (50%) |
| Vomiting | 26 (25%) | 10 (48%) | 8 (42%) | 7 (58%) |

Of 21 patients who had used dronabinol, loss of appetite, weight loss, and nausea were the most common reasons for use (Table 3). The symptoms reported to be most effectively improved by dronabinol were stress, loss of appetite and weight loss (data not shown).

Experience of Side Effects

Among the 102 clinic patients who had ever used cannabis, overall side effects were felt to be severe in 3 (2.9%), strong in 6 (5.9%), moderate in 18 (17.6%), mild in 36 (35.2%) and absent in 34 (33%) (5 missing). “High” was reported as a side effect in 85 (87%), dry mouth in 64 (63%), drowsiness in 45 (44%), paranoia and palpitations in 27 (26%), and anxiety in 26 (25%) patients. Six patients reported stopping cannabis use because of intolerable side effects.

FIGURE 1. Percentage of PHAs reporting strong or complete relief of symptoms with cannabis use.



Adherence to Therapy

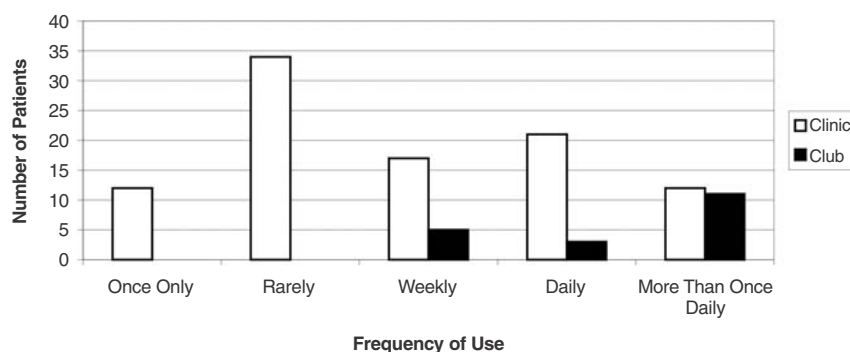
One hundred fourteen (71.3%) clinic patients reported experiencing adverse effects attributable to the use of antiretroviral therapy (ART). Adverse effects contributed to an increase in missed ART doses in 23 (14.4%) of clinic patients. Forty-four (27.5%) patients reported using cannabis or dronabinol to counteract the adverse effects of ART. Data on cannabis and dronabinol separately are not available. Twelve (7.5%) clinic patients reported that use of cannabis or dronabinol reduced the number of ART doses missed.

FREQUENCY OF USE

Of the 102 clinic patients who had ever used cannabis, 96 provided information on the frequency of cannabis use (Figure 2). Of these, 46 (48%) reported cannabis use either once only or rarely.

All 19 of the compassion club clients reported ever having used cannabis, and all 19 continued to use cannabis. Fourteen (73.7%) clients reported having ever used cannabis solely for recreational purposes. Twelve (63.2%) clients reported having ever used dronabinol, with 2 continuing to use dronabinol. Stress (19 clients) and loss of appetite (17 clients) were the most common symptoms for which cannabis was used. Nine clients reported strong or complete relief of loss of appetite (Figure 1). Six clients reported strong or complete relief of vomiting. Fif-

FIGURE 2. Frequency of cannabis use among 96 clinic and 19 compassion club PHAs.



teen (78.9%) clients reported experiencing adverse effects attributable to the use of antiretroviral therapy (ART). These adverse effects contributed to an increase in missed ART doses in 5 (26.3%) clients. Fifteen (78.9%) clients reported using cannabis or dronabinol to counteract the adverse effects of ART, and 6 (31.6%) reported that use of cannabinoids reduced the number of ART doses missed. All club clients reported at least weekly use, with 11 reporting more than once daily use.

Dose Size

For data on cannabis dose size, the information given from the clinic and club responses was combined, and restricted to those reporting current use of cannabis *and* use of cannabis for symptom relief. Data was available from 56 patients. Forty-four (79%) patients reported that a joint was the single dose used, with 32 (57%) patients reporting use once or more per day (Figure 3).

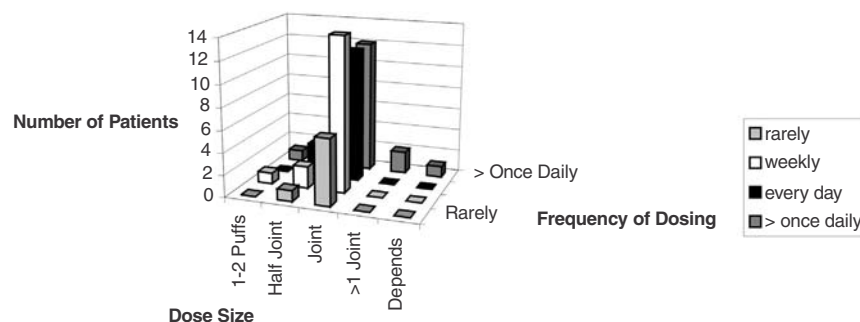
Preference for Cannabis or Dronabinol

Fifty-seven patients reported having used both cannabis and dronabinol (42 clinic, 15 club). Of these, 53 (93%) preferred cannabis (39 clinic, 14 club).

Interest in Clinical Trial Participation

Patients were asked if they would be interested in participating in a clinical trial of cannabis. Of the patients who have ever used cannabis,

FIGURE 3. Dose and frequency of cannabis use among PHAs in Canada (n = 56)



78 (66%) were willing to participate in a trial and 10 (8%) were undecided. Of those who had never used cannabis, 10 (21%) were willing to partake in a trial, and 11 (23%) were undecided. Of the 48 clinic patients using cannabis at least weekly, 43 (90%) stated a willingness to participate in a clinical trial. Of the 46 patients using cannabis rarely, 17 (37%) reported willingness to participate. This preference for trial participation among current frequent users may be related to their experience of side effects of cannabis; of the 46 rare users, 18 (39%) report moderate to severe side effects, while of the 48 weekly users, only 8 (16%) report moderate to severe side effects. Patients who have had unpleasant experiences of adverse effects to cannabis may use cannabis less often, and this may reduce their interest in trial participation.

DISCUSSION

This study attempts to address specific aspects of therapeutic cannabis use among PHAs in Canada, specifically the reasons for use, the perceived effects and the dose and frequency of use. We anticipate that this information will be useful in the design of clinical trials of cannabis for PHAs. Before interpreting the results, we will consider the weaknesses of the study.

The low response rate (40%) among the clinic patients must be considered a potential source of selection bias. Current cannabis users, who may wish to see cannabis more available, may be more likely to respond thus increasing the estimate of prevalence of use. Alternatively, current cannabis users may be less likely to respond given concerns about con-

fidentiality, which would decrease the estimated prevalence. It is difficult to assess the relative contributions of these effects; however, a low response rate is not unusual in studies asking patients about cannabis use (Braitstein et al. 2001; Consroe et al. 1997; Sidney 2001).

Reasons for cannabis use among PHAs were divided into recreational and therapeutic indications. We did not formally distinguish between these two indications in this study, but rather asked patients if they had *ever* used cannabis for symptom control. More precise therapeutic dose estimates may have been possible had we asked more specifically about current cannabis use specifically for symptom management.

The estimates of dose size and frequency must be interpreted carefully, as we did not establish a standard means for estimating amount of cannabis use. We used the term 'joints' to quantify amounts used, but this is bound to mean different things to different people. It does not consider sharing or the size of joints used. Alternative methods, such as calculations of daily requirements from monthly amounts used, require assumptions about frequency of use patterns, which are clearly quite variable. It is clear that dose estimation from survey data is an inexact science, but we may tentatively describe the overall magnitude of dose sizes used in common practice.

Given these limitations, our survey shows that approximately 37% of PHAs attending HIV clinics in Toronto, Montreal and Ottawa are current cannabis users. Although the observed prevalence in this survey was marginally higher than in others reported [33% (Sidney 2001), 32% (Dansak 1997), 23.9% (Fairfield et al. 1998), and 15% (Braitstein et al. 2001)], the margin of error suggests that our results are consistent with previously observed data. We did not follow up the non-responders because of ethical concerns about confidentiality. If we were to assume all non-responders were non-users, the estimate of prevalence of current use would fall to 59/400 (14.8%). It is clear that a significant proportion of PHAs are smoking cannabis, and the risks and benefits of cannabis use on their health need to be examined carefully and objectively.

We found that most current users report relief from loss of appetite, weight loss and nausea. Loss of appetite and nausea have been reported as major reasons for cannabis use in other surveys (Dansak 1997; Fairfield et al. 1998; Harris et al. 2000; Sidney 2001). Our finding of the use of cannabis to relieve stress was also reported in earlier studies (Fairfield et al. 1998; Sidney 2001). We were interested to note the reported use of cannabis to improve side effects associated with ART. The association between pharmaceutical side effects and cannabis use was noted in an earlier retrospective study (Braitstein et al. 2001), and

we have confirmed this here. We suggest that cannabis use may influence ART adherence, and hence affect AIDS-related morbidity and mortality. This hypothesis may be tested in a long-term clinical trial. Clinically meaningful drug-drug interactions between cannabinoids and ART have not been demonstrated among PHAs (Kosel et al. 2002).

With respect to dose strategies, given the limitations mentioned above, we can make some broad observations. PHAs appear to use one or less joints at each dosing point, but frequency of dosing ranges from weekly to more than once daily use. Important questions such as what constitutes a “joint” are not easy to address, but we can gather data from other sources. Compassion club patients in San Francisco report using approximately one ounce (28 g) of herbal cannabis per month (Harris et al. 2000), which would be equivalent to just under a gram a day. Actual amounts of cannabis used may vary between individuals depending on characteristics such as delivery system (joint versus pipe), admixture with tobacco, THC content of cannabis used and smoking characteristics such as length of inhalation and breath holding time. For clinical trials, several methods for reducing this variability are evident. One would be to hold constant the amount of cannabis used and vary the THC content of the cannabis preparation. In addition, the method of smoking may be standardized. Although standardized smoking techniques have been developed (Chait et al. 1988), pharmacokinetic studies have shown that there is still considerable variability in THC absorbed (Huestis et al. 1992). We suggest that the use of a pipe may allow single inhalations of prescribed amounts of cannabis, reducing loss of THC as second hand smoke, which may yield more consistent dose delivery.

We asked patients about interest in participation in clinical trials of cannabis. Of the 50% who were interested, most were current cannabis users. A trial attempting to recruit only cannabis-naïve subjects may therefore give rise to poor enrollment, in addition to ethical concerns of exposing naïve patients to cannabis smoke. We also found that patients interested in participating were more likely to be frequent users reporting less side effects to cannabis than rare users. The selection of only current cannabis users may therefore expose the study to potential biases in terms of expectancy, problems with placebo and blinding, and compliance issues. We suggest that early studies in this population should be restricted to current users on both feasibility and ethical grounds, and the resulting data on safety and dose and effect sizes may help address ethical concerns involving non-users in future studies.

Throughout this study we have tried to obtain information on the comparisons between dronabinol and cannabis. We found that drona-

binol is not as widely used as cannabis, but is used for the same reasons. Patients who had tried both methods preferred smoking cannabis to using dronabinol. The preference for cannabis is widely recognized and has been found in a similar survey (Sidney 2001) in which preference was 98% in favor of cannabis. We did not explore the reasons for this, but suggested reasons have included an improved ability to self-titrate, improved tolerability when faced with nausea and vomiting, and unpleasant side effects of oral THC (Grinspoon and Bakalar 1997).

In summary, we present results of a prospective cross-sectional survey of cannabis use patterns among PHAs in three HIV clinics in Eastern Canada. These data will be useful in designing a clinical trial of smoked cannabis for symptom relief in PHAs. Our results are comparable with those of other PHA populations, and support the justification for clinical trials on the grounds that cannabis is widely used among PHAs, is perceived to be effective at relieving loss of appetite, nausea and stress, and may help patients tolerate antiretroviral therapy.

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