

Perceptions and Use of Medical Marijuana in an Urban Substance Treatment Program

Corresponding Author: Charles Shuman M.D.

Denver Health and Hospital Authority and the University of Colorado Denver, 667 Bannock Street, MC 3405, Denver, CO 80204, United States. Phone: 1-303-436-8510 Fax: 1-303-436-6204

Christian Thurstone M.D.

Denver Health and Hospital Authority and the University of Colorado Denver, 1155 Cherokee Street, MC 3440, Denver, CO 80204, United States

Loren Cobb PhD

Department of Mathematics, Campus Box 170, University of Colorado Denver, PO Box 173364, Denver, CO 80217-3364, United States

Abstract

Background: As of October 31, 2011, in the state of Colorado, 88,872 patients were registered with the state as eligible to receive medical marijuana. In Colorado, the use of marijuana in patients enrolled in substance abuse treatment is not well understood.

Methods: 141 participants in a substance treatment program completed an anonymous survey to evaluate use, and beliefs regarding medical marijuana. Using Fisher's Exact Tests, participants who reported having or planning to obtain a medical marijuana registration were compared to marijuana users without medical marijuana registrations with regard to frequency of marijuana use for non-medical reasons. Use of marijuana for non-medical reasons was reported by participants as use "to get high".

Results: 141 surveys were completed. 128 (91%) of respondents had a history of marijuana use. Of the 38 subjects who had or were planning on obtaining a medical marijuana registration, 3 (9%) indicated

they had used marijuana only for medical reasons, 28 (74%) had used marijuana both for medical reasons and for non-medical reasons, and 7 (18%) had used marijuana only for non-medical reasons. The frequency of marijuana use for non-medical reasons in the past year, and current use of marijuana for non-medical reasons, once a week or more in the last year, was significantly greater among subjects with a medical marijuana registration compared to subjects without a registration: 51% vs. 76% ($p < 0.048$), 22% vs. 53% ($p = 0.014$) respectively. Among other findings, only 33% believed marijuana use could cause addiction. 13% believed its use could cause psychosis, and a number of patients had no other treatment, other than marijuana, for the medical condition for which they were being treated.

Conclusions: The use of marijuana for non-medical reasons is more common among patients admitted to substance abuse treatment who are registered medical marijuana users, when compared to those who are not registered medical marijuana users. In our program, an urban substance abuse treatment center in Colorado, patient's perceptions of the potential risks of marijuana are inconsistent and generally not compatible with the known risks.

Introduction

The use of medical marijuana became legal in the state of Colorado in 2001. As of October 31, 2011, 88,872 patients were registered with the state as patients eligible to receive medical marijuana (Colorado Department of Public Health and the Environment, 2011). Despite this, there is little information regarding the characteristics of medical marijuana patients in substance treatment. We found one published study that evaluated the outcomes of 18 adult medical marijuana patients enrolled in substance treatment. Outcomes were measured by the California Outcomes Measurement System; results were available for only 8 outpatient treatment completers. Between medical marijuana and non-medical marijuana users, there were no statistically significant differences in substance abuse outcomes or social outcomes, such as: reduction in use of primary drug of choice, treatment completion rates, employment status at discharge, and criminal justice involvement in the last 30 days. Marijuana was listed as the primary or secondary drug for which treatment was being sought in the medical marijuana patients evaluated. The study was limited by its small sample size (Swartz 2010).

There is concern that medical marijuana may be used for non-medical reasons or result in marijuana dependence and addiction (American Society of Addiction Medicine, 2010). We found a study which showed that an overwhelming majority (87.9%) of 3038 applicants for a medical marijuana registration had tried marijuana before the age of 19, usually in a social setting (O'Connell and Bou-Matar, 2007). Based on the age and the setting, this indicates that first use of marijuana in these applicants was likely non-medical in nature: supporting the study's hypothesis that non-medical use of marijuana is common in patients seeking medical marijuana registration. This study also found that the use of illicit drugs in medical marijuana applicants was as high as 15.86% for male applicants having used heroin in the past, and 67.32 % of male applicants having used cocaine (O'Connell and Bou-Matar, 2007). This indicates that the population applying for medical marijuana registrations may have higher rates of substance abuse than the general population.

In Colorado, there is concern that recommendations by physicians for patients' use of marijuana for medical reasons, have not followed established principles of medical care (Nussbaum, Boyer, and Kondrad, 2011). There is no requirement that physicians evaluate patients for mental illness or addictive disorders, including marijuana dependence that could be adversely affected by the prescription of an addicting drug (Colorado Constitution 0-4-287 - ARTICLE XVIII). Physicians do not have to document the failure of other treatments before recommending marijuana (Colorado Constitution 0-4-287 - ARTICLE XVIII). Data generated by the Colorado Department of Public Health and Environment through January 31, 2011, showed that a small number of physicians recommend medical marijuana for the majority of registered patients. 15 physicians had recommended marijuana for 49% of patients with medical marijuana registrations (Nussbaum, Boyer, and Kondrad, 2011). This indicates that medical marijuana users may not be receiving adequate evaluation and treatment for the condition for which medical marijuana is being used (Nussbaum, Boyer, and Kondrad, 2011).

This study attempts to address several questions with regard to patients admitted to an urban substance abuse treatment center in Colorado. How do these patients perceive the use of medical marijuana? Among the patients who are registered medical marijuana users, what type of evaluation and treatment have they had for the underlying medical condition? Are patients who are registered medical marijuana users more likely to be currently using marijuana for non-medical reasons, when compared to patients with a history of marijuana use who are not registered medical marijuana users? The value to answering these questions is to improve substance abuse treatment for patients in states where medical marijuana is available. For instance, if patients with medical marijuana registrations are using marijuana for non-medical reasons, this may indicate the presence of a marijuana use disorder that should be addressed during the course of their substance abuse treatment. Further, if patients believe that medical marijuana can help treat addiction, its use may lead to negative treatment outcomes. Therefore, the study has the following aims:

- (1) To conduct a preliminary investigation into the prevalence of medical marijuana use in patients enrolled in substance abuse treatment.
- (2) To conduct a preliminary investigation into the nature of the evaluation and treatment that medical marijuana users have received for the medical condition for which they are using marijuana, and assess what conditions patients believe marijuana can help treat and what adverse effects marijuana may have.
- (3) To explore the hypothesis that patients with medical marijuana registrations or those planning on getting medical marijuana registrations were more likely to have a history of or to be presently using marijuana for non-medical reasons, when compared with patients without medical marijuana registrations.

Methods

Participants

Patients enrolled in outpatient substance treatment at an urban, safety-net hospital in Denver, Colorado, were asked if they would fill out a survey regarding medical marijuana use. They were required to meet the following criteria:

- 1) enrollment in the substance treatment program where the study took place, and
- 2) willingness to fill out the survey.

The exclusion criterion was an inability to read and complete the English-language survey.

Measures

The medical marijuana survey was a self-report, pen and paper questionnaire created for the study. Use of marijuana for non-medical reasons was assessed by asking patients whether or not they had used marijuana for medical reasons, or to get high. The survey included questions regarding participant's age, whether marijuana was used for medical reasons, to get high, or both, and the frequency of past and present marijuana use. The questionnaire included questions regarding whether or not participants had or were planning on obtaining a medical marijuana registration, the reasons for medical marijuana use, and the nature of evaluation and treatment received. Perceptions regarding the potential risks and benefits of marijuana were assessed. There were also questions about changes in use and availability of marijuana since medical marijuana became legal in the state. The exact instrument is available on request. The use of marijuana to get high once a week or greater was used to compare groups. This cutoff was chosen to be consistent with other instruments (Adamson and Sellman, 2003). Demographic information for patients who were admitted to the treatment program during the time period of the study was obtained by self report, as part of the standard admission process.

Procedures

Approval was obtained from the Colorado Multiple Institutional Review Board prior to beginning the study. Participants were asked by their counselors if they would like to participate in the study; they received a verbal explanation of the study and they gave verbal consent to be involved. There was no reimbursement for participants. All participants completed the questionnaire while they were enrolled in the treatment program. The survey was anonymous. It was returned by the participant in a sealed envelope. Subjects were informed that participation or non-participation would not affect their treatment.

Statistical Analysis

For aim 1 and 2, descriptive statistics were used to evaluate the participant's answers to survey questions. For aim 3, participants were separated into three groups: 1) those reporting having a medical marijuana registration, 2) those reporting having a medical marijuana registration and patients planning on obtaining a registration, and 3) those with a history of marijuana use but did not have and were not planning on obtaining a medical marijuana registration. Groups 1 and 2 were compared separately with group 3 with respect to the following variables: 1) having used marijuana to get high in the previous year, 2) having used marijuana once a week or more in the last year, and 3) having had a history of using marijuana once a week or more for any three month period in their life. In cases where the survey was not completely filled out, the study only included the available data. Fisher's Exact Tests were used to determine whether or not there was a significant difference between groups.

Results

Sample description

During the period of time the survey was handed out (6/1/10 to 12/31/10), 192 patients were admitted to treatment; 60% were male and 40% were female. Race was reported as follows: 58% Caucasian, 24% Hispanic, 14% black, 2% Native American, 1% Asian, and 1% other. The primary drug of choice was reported as 55% alcohol, 20% heroin or other opioids, 10% cocaine, 8% methamphetamine, 7% marijuana, and 0.5% benzodiazepines. Of those admitted, 55% indicated having a secondary drug of choice; 15% of admissions described marijuana as the secondary drug of choice. Employment was reported as the following: 42% unemployed, 24% worked full time, 14% disabled, 13% worked part time, 3% students, 2% retired, and 2% other. Health status was reported as follows: 51% had a mental illness, 17% were HIV positive, and 3% were pregnant. Marital status was reported as the following: 62% single, 19% married, 18% separated/divorced, and 1% widowed. Referral sources were indicated as the following: 41% self-referred, 22% referred by criminal justice, 18% by another medical provider, 8% other substance treatment provider, 6% social/human services, 3% civil involuntary commitment, and 1% other.

141 surveys were completed. The average age of respondents was 37.4 years (SD=10.8, range 20-60). 128 (91%) of respondents had a lifetime history of marijuana use. Of those who indicated they used marijuana, 3 (2%) indicated they had used it for medical use only, 74 (58%) indicated they used it only for non-medical use, and 51 (40%) had used it for both medical use and non-medical use. The average age of first use of marijuana for non-medical use was 15.6 (SD=4.1, range 7-28); the average age for first experiencing the medical condition for which marijuana was used was 25.5 years (SD=8.9, range 12-51).

Survey responses

Table #1 reports participant responses to questions on whether or not they have or are planning on obtaining a medical marijuana registration: the safety of marijuana use in different groups, and questions regarding changes in use and availability of marijuana since medical marijuana became legal in the state.

Participants were asked if they felt marijuana was an effective treatment for a list of medical conditions. The percentage of participants answering yes were as follows: pain (60%), anxiety (57%), insomnia (50%), wasting due to HIV or cancer (48%), nausea (47%), depression (43%), glaucoma (35%), bipolar disorder (33%), other addictions (26%), ADHD (24%), multiple sclerosis (23%), psychosis (11%), other conditions (11%), and autism (6%).

Participants were asked if marijuana can cause any of the following adverse effects. The percentages of respondents answering yes were as follows: loss of motivation (48%), difficulty concentrating (44%), lung disease (43%), memory loss (42%), decreased performance at work or school (38%), weight gain (35%), addiction (33%), depression (30%), anxiety (29%), heart disease (22%), sexual problems (18%), psychosis (13%), trauma related to accidents (13%), bipolar disorder or mood swings (13%), infections (8%), loss of bone strength (7%), and other (1%).

Of the 17 subjects who had a medical marijuana registration, 2 (12%) indicated they had used marijuana only for medical use in their life, 14 (82%) had used marijuana both for medical use and non-medical use, and 1 (6%) subject had used marijuana only for non-medical use. Out of the 21

subjects planning on getting a medical marijuana registration, 1 (5%) had used only for medical use, 14 (67%) had used for both medical use and non-medical use, while 6 (28%) had used only for non-medical use.

Of the 16 subjects with a medical marijuana registration who used marijuana for medical reasons, 14 (88%) were diagnosed by a medical provider other than the physician recommending the medical marijuana registration; 13 (81%) had previous treatment, including non-marijuana prescription medication, over-the-counter medication, therapy, or surgery for the condition. Of the 15 respondents who planned on getting a medical marijuana registration and who used marijuana for medical reasons, 7 (47%) had the medical condition diagnosed by a medical provider, and 8 (53%) were treated for the medical condition with a non-marijuana treatment.

Table # 2 shows that non-medical use of marijuana was greater among subjects with a medical marijuana registration, when compared to subjects with a history of marijuana use who do not have and were not planning on obtaining a medical marijuana registration. The difference was statistically significant on two measures: any non-medical use of marijuana in the last year, and non-medical use of marijuana once a week or more in the last year. In the combined group of those with a medical marijuana registration and those planning on obtaining a registration, the non-medical use of marijuana was significantly greater on all variables when compared to subjects who do not have and are not planning on obtaining a medical marijuana registration.

Discussion

Summary of findings

The results support our hypothesis that patients with medical marijuana registrations or planning on getting medical marijuana registrations were more likely to use marijuana for non-medical reasons (to get high) than those without medical marijuana registrations. In our sample, use of marijuana was frequent for both medical reasons and non-medical use; use for medical reasons alone was an infrequent result. This indicates that even among patients who use marijuana for medical reasons, the majority are also using it for non-medical reasons. Although the presence of marijuana use disorders

among medical marijuana users was not directly measured in our study, there was a high prevalence of non-medical use of marijuana in these patients. This may indicate that marijuana use disorders are present in patients presenting to substance abuse treatment who state that they are using marijuana for medical reasons. Therefore, this should be evaluated as a part of treatment planning similarly to non-medical use prescription drugs, such as opiates or sedatives. A substantial number of respondents either thought marijuana was safe, or were unsure as to its safety for potentially vulnerable populations: pregnant women, children, and adolescents. A number of our subjects felt marijuana could help treat addiction, depression, bipolar disorder, and psychosis: even though there is evidence that marijuana use may potentially worsen these conditions (Hall and Degenhardt, 2009, Leweke and Koethe, 2008). This finding indicates that knowledge regarding the potential risks associated with marijuana use for these groups was limited in the study group.

Several patients with medical marijuana registration had never had treatment, other than marijuana, for their medical condition. This suggests the possibility that for some in this population, marijuana is being used prior to other more established treatments, and supports concerns that medical marijuana patients may not be receiving appropriate care for their medical problems.

Study limitations

Limitations of the study include its cross-sectional design, obtaining data from only a single site, relying on self-report, using a treatment sample, and not using a standardized measurement for risk factors for marijuana misuse. These limitations affect the generalizability of results to other settings and other treatment programs. Not using a standardized instrument may also affect the validity of the findings.

Implications

The study findings support further research to determine if medical marijuana is being used for non-medical reasons. Longitudinal studies should also be performed to evaluate substance treatment outcomes in these patients to determine the effect of marijuana use on treatment success. There should also be education of patients about the potential adverse effects of marijuana, to avoid misperceptions

regarding the risks and benefits of the drug. Further research should be done to determine if patients who use medical marijuana are receiving appropriate medical care for the conditions for which they are using marijuana.

References:

Adamson, S.J., Sellman, J.D., 2003. A prototype screening instrument for cannabis use disorder: the Cannabis Use Disorders Identification Test (CUDIT) in an alcohol-dependent clinical sample. *Drug and Alcohol Review* 22, 309-315.

American Society of Addiction Medicine (2010) ASAM Medical Marijuana Task Force White Paper retrieved 8/1/11 from <http://www.ibhinc.org/pdfs/MedicalMarijuanaAGWhitePaper.pdf>

Colorado Constitution 0-4-287 - ARTICLE XVIII - Miscellaneous Art.XVIII – Miscellaneous. [cited 2011 Dec. 29]. Available from: <http://www.cdphe.state.co.us/hs/medicalmarijuana/amendment.html>.

Colorado Department of Public Health and the Environment, December 2011. The Colorado Medical Marijuana Registry. <http://www.cdphe.state.co.us/hs/Medicalmarijuana/index.html> (last accessed 22.12.11).

Hall, W., Degenhardt, L., 2009. Adverse health effects of non-medical cannabis use. *Lancet* 374, 1383-1391.

Leweke, F.M., Koethe, D., 2008. Cannabis and psychiatric disorders: it is not only addiction. *Addiction* 103, 264-275.

Nussbaum A.M., Boyer J.A., and Kondrad E.C. “But my Doctor Recommended Pot”: Medical Marijuana and the Patient–Physician Relationship *J Gen Intern Med* 26(11):1364–7

O'Connell, T.J., Bou-Matar, C.B., 2007. Long term marijuana users seeking medical cannabis in California (2001-2007): demographics, social characteristics, patterns of cannabis and other drug use of 4117 applicants. *Harm Reduction Journal* 4, 16.

Swartz, R., 2010. Medical marijuana users in substance abuse treatment. *Harm Reduction Journal* 7, 3..

Table #1 Beliefs, behaviors, and intentions about medical marijuana (n=141)

	yes	no	unsure	no response
Do you have a medical marijuana registration?	17(12%)	114(81%)	0(0%)	10(7%)
Are you planning on getting a medical marijuana registration ?	21(15%)	79(56%)	15(11%)	26(18%)
Do you believe marijuana is a safe drug for adults?	89(63%)	22(16%)	25(18%)	5(3%)
For children under the age of 13?	4(3%)	121(86%)	12(8%)	4(3%)
For adolescents ages 13-18?	20(14%)	84(60%)	32(22%)	5(4%)
For pregnant women?	15(11%)	98(69%)	23(16%)	5(4%)
Should marijuana be legal for recreational use?	73(52%)	40(28%)	24(17%)	4(3%)
Should marijuana be legal for medical use?	109(77%)	11(8%)	13(9%)	8(6%)
Has marijuana been more available on the street since medical use became legal?	32(23%)	41(29%)	64(45%)	4(3%)
Have you or people you know been using more marijuana?	49(35%)	57(40%)	30(21%)	5(4%)

Table #2 Comparison of medical and non-medical marijuana users

	Participants who had used marijuana in the past but do not have and are not planning on obtaining a medical marijuana registration N=69	Participants who have a medical marijuana registration N= 17	p-value	Participants who have a medical marijuana registration or are planning on obtaining a medical marijuana registration N= 38	p-value
Non-medical use of marijuana in the last year	35 (51%)	13 (76%)	0.0480	30 (79%)	0.0034
Non-medical use of marijuana once a week or more in the last year	15 (22%)	9 (53%)	0.0140	19(50%)	0.0029
Non-medical use of marijuana at least once a week for 3 month period in life	31(45%)	12(71%)	0.0512	25(66%)	0.0310
Non-medical use of marijuana in the last year and/or non-medical use of marijuana at least once a week for 3 month period in life	41(59%)	15(88%)	0.0211	32(84%)	0.0066

Note: Table #2 Compares the frequency of marijuana use on variables in the first column, between patients without a medical marijuana registration (column 2) and two groups 1) patients with a medical marijuana registration (columns 3 and 4) and 2) a combined group of patients who either have a medical marijuana registration or are planning on obtaining a registration (columns 5 and 6).

Biography:

Charles Shuman, MD, is an Assistant Professor of Psychiatry at the University of Colorado School of Medicine (UCSOM). . He is also Medical Director of the outpatient substance abuse treatment program and a staff psychiatrist at Denver Health Medical Center. He received his BA and MD degree from Temple University in Philadelphia PA. He completed his internship and residency in Psychiatry at the University of Florida in Gainesville FL. He completed his Fellowship in addiction psychiatry at UCSOM. He is board certified in General Psychiatry and Addiction Psychiatry.

Conflict of Interest Statement:

I declare that I have no proprietary, financial, professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position presented in, or the review of, the manuscript entitled "Perceptions and Use of Medical Marijuana in an Urban Substance Abuse Treatment Program".

Author: Charles Shuman Date: 12/28/2011

Christian Thurstone, MD, is an attending physician with the Adolescent Substance Abuse Treatment, Education, and Prevention Program of Behavioral Health. He is also an Assistant Professor at the University of Colorado School of Medicine (UCSOM). He received his undergraduate degree from Duke University and his medical degree from the University of Chicago. He completed a general psychiatry residency at Northwestern University Medical School, child psychiatry residency at the University of Chicago, and an addiction psychiatry fellowship at the UCSOM. He is board-certified in General Psychiatry, Child and Adolescent Psychiatry, and Addiction Psychiatry. His research interests include medication development for adolescent substance use disorders.

Conflict of Interest Statement:

I declare that I have no proprietary, financial, professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position

presented in, or the review of, the manuscript entitled "Perceptions and Use of Medical Marijuana in an Urban Substance Abuse Treatment Program".

Author: Christian Thurstone Date: 12/28/2011

Loren Cobb, PhD, is Director of the Statistical Consulting Service of the University of Colorado Denver, and an Associate Research Professor in the Department of Mathematical and Statistical Sciences. He received his BA, MA, and PhD degrees from Cornell University, Ithaca, New York, and completed a post-doctoral fellowship at the University of South Florida Medical School. His primary research is in mathematical epidemiology, and especially in the statistical problems in tracking and filtering very-high-dimensional data. His research is currently funded by the National Institutes of Health (ARRA challenge grant), and by the Department of Defense for mathematical models of social conflict, poverty, and organized crime in Latin America. He is recipient of the Gold Medal of the Bolivian School of Advanced National Studies, and has conducted national strategic planning exercises for a dozen governments throughout Latin America.

Conflict of Interest Statement:

I declare that I have no proprietary, financial, professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position presented in, or the review of, the manuscript entitled "Perceptions and Use of Medical Marijuana in an Urban Substance Abuse Treatment Program".

Author: Loren Cobb Date: 12/28/2011