



Medical Marijuana as complementary care in HIV: How should we use it?

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Learning Objectives

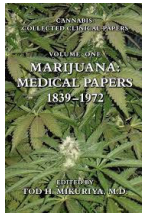
- Summarize the current literature on marijuana and pain, sleep, appetite, anxiety, & depression
- Discuss what is known about marijuana and HIV
- Examine medical marijuana trends in Florida



Is Marijuana Medicine?

Marijuana as Medicine: History

- Cannabis Savita has a long history of medical and recreational use
- Studies in US and Britain documented as of 1839
- The 1937 Marihuana Tax Act
- Robert Randall, 1976 Compassionate Use IND
- Currently 36 states, 4 territories, and DC have laws that allow the medical use of marijuana



Marijuana as Medicine: Pain



- Cannabis or Cannabinoids demonstrate a clinically significant reduction in pain symptoms (National Academies of Medicine, 2017)
- Pre-clinical studies (animal models) and a few small human trials have shown both pain reduction and heightened sensitivity to pain (Hill et al., 2017)
- Low dose v. medium dose v. high dose (Wallace et al., 2007)
- Pre-clinical studies have also demonstrated sex differences (Blanton et al., 2021)

Marijuana as Medicine: Sleep



- Moderate evidence exists for the therapeutic benefits of cannabis or cannabinoids for improving sleep outcomes
 - Decreasing time to sleep onset
 - Increasing the amount of time patients stay asleep (sleep duration)
- Evidence for how marijuana interacts with serotonin to regulate the sleep wake cycle is inconclusive (Vaseghi et al., 2021)

Marijuana as Medicine: Appetite



- Acute administration of marijuana stimulates appetite

ARTICLE Open Access

Effects of oral, smoked, and vaporized cannabis on endocrine pathways related to appetite and metabolism: a randomized, double-blind, placebo-controlled, human laboratory study

Mehdi Farahnaei^{1,2}, Gray R. McDermott¹, Matthew N. Neumeier^{1,3}, Václav Muzik^{1,2}, Osama A. Abuhaouf¹, Marilyn A. Hueston^{1,2} and Lorenzo Leggio^{1,2*}

- The paradox: chronic marijuana use is associated with decreased body mass index

Marijuana as Medicine: Anxiety

- Results are Mixed

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Contents lists available at ScienceDirect

Neuropharmacology

journal homepage: www.elsevier.com/locate/neuropharm



Invited review

Endocannabinoids, cannabinoids and the regulation of anxiety

Gavin N. Petrie, Andrei S. Nastase, Robert J. Ankema, Matthew N. Hill

MaxPlanck Brain Institute and the MaxPlanck Center for Mind, Health Education and Research, Department of Cell Biology and Anatomy & Psychiatry, Cumming School of Medicine, University of Calgary, Calgary, AB, T2N 1N4, Canada



Depression



- No RCTs available to date on MDD

Summary



- What is the evidence for marijuana as medicine?
 - Evidence for pain and sleep
 - Mixed evidence for appetite and anxiety
 - Limited evidence for depression

What do we know about marijuana and HIV?



Marijuana use among PLWH



- Prevalent among PLWH, 60% of adults reporting use
- Motives for use:
 - Recreational
 - Management of HIV associated symptoms, pain, insomnia, lack of appetite, anxiety and depression
- 80% of PLWH report who using recreationally report improvements in nausea, pain, anxiety, and depression



Adherence to Treatment: Mixed Results

- Sinha et al. (2017) found:
 - Frequency of marijuana use independent of other substance use does not appear to be associated with negative HIV treatment outcomes
 - Effective HIV treatment does not seem to be impeded by marijuana usage
- Vidot et al. (2017) concluded there was "no association between cannabis use groups and adherence or medication management"
- Lake et al. (2017) found that when marijuana only did not predict lower odds of antiretroviral treatment adherence
 - However, daily marijuana use was combined with periods of binge alcohol use, antiretroviral treatment compliance declined



Adherence to Treatment: Mixed Results

- Okafor et al. (2016) found no "statistically significant association between marijuana use and viral suppression"
- C de Jong et al. (2005) obtained similar results when investigating the link between marijuana use and adherence to antiretroviral therapy
- Kipp et al. (2017) found daily marijuana use was associated with missed clinic appointments in individuals who were receiving regular HIV care



Physical Health & Sx Alleviation

- Rizzo et al. (2017) determined that components of marijuana may decelerate the processes implicated in HIV-associated neuroinflammation
- Nordmann et al. (2017) found that daily marijuana use may be a protective factor against steatosis in this population
- Adams et al. (2017) concluded that there is "no evidence for a negative effect of cannabis use on mortality risk in HIV"



Physical Health & Sx Alleviation

- Haney et al. (2007) found that “marijuana was well tolerated and produced substantial and comparable increases in food intake.”
- Similarly, a study was conducted by Prentiss et al. (2004) examined patterns of smoked marijuana and perceived benefit found relief of anxiety and/or depression, improved appetite, increased pleasure, and relief of pain.”



Physical Health & Sx Alleviation: Mixed Results

- Thompson et al. high prevalence of marijuana use only was associated with poor viral suppression
- Lorenz et al. (2017) marijuana use was found to be a significant risk factor for cardiovascular disease, **independent of tobacco smoking** and other traditional risk factors associated with cardiovascular disease



Neurocognitive Functioning: Mixed Results

- Early onset marijuana users, compared to non-marijuana users and late onset marijuana users 8 X more likely to have learning impairment; 4x's more likely to have memory impairment (Skalski 2017)
- Thames et al. in 2015 supports this conclusion
 - moderate-to-heavy marijuana users living with HIV performed significantly lower on learning/memory than moderate to heavy users who were not living with HIV
- Chang et al. (2006 chronic marijuana use may lead to decreased neuronal and glial metabolites (clinical significance was unclear)

Neurocognitive Functioning: Mixed Results



- Lorkiewicz et al. (2017) lifetime marijuana and alcohol use and cognitive dysfunction in PLWH and found there was not a consistent pattern of association with lifetime marijuana use or alcohol use on measures of cognitive dysfunction
- Thames et al. (2016) concluded marijuana users living with HIV are not at greater risk for adverse brain or cognitive outcomes compared to marijuana users not living with HIV

Marijuana as medicine in HIV



- First, there is a disconnect in what studies tell us PLWH are using marijuana for mainly: stress relief, pain, nausea, sleep, anxiety and depression
- Second, regarding treatment adherence results are mixed with more evidence suggesting that marijuana does not negatively impact adherence, except under certain circumstances
- Third, there is very limited and not high quality evidence that there may be some symptom relief
- And finally, effects on cognition are inconclusive

Why is it all so mixed?



- Challenges with measurement
- CBD and THC are not the only game in town
- Changes with CBD only, synthetic marijuana, distillates, whole flower
- Lack of clinical trials with standard products of true potency

State of FL: Medical Marijuana



- “Medical cannabis” means all parts of any plant of the genus *Cannabis*, whether growing or not; the seeds thereof; the resin extracted from any part of the plant; and every compound, manufacture, sale, derivative, mixture, or preparation of the plant or its seeds or resin that is dispensed only from a dispensing organization for medical use by an eligible patient as defined in s. 499.0295.

State of FL: Low THC




- “Low-THC cannabis” means a plant of the genus *Cannabis*, the dried flowers of which contain 0.8 percent or less of tetrahydrocannabinol and more than 10 percent of cannabidiol weight for weight; the seeds thereof; the resin extracted from any part of such plant; or any compound, manufacture, salt, derivative, mixture, or preparation of such plant or its seeds or resin that is dispensed from a medical marijuana treatment center.

Qualifying Medical Conditions



- Cancer.
- Epilepsy.
- Glaucoma.
- Positive status for human immunodeficiency virus
- Acquired immune deficiency syndrome
- Posttraumatic stress disorder.
- Amyotrophic lateral sclerosis.
- Crohn’s disease.
- Parkinson’s disease.
- Multiple sclerosis.
- Medical conditions of the same kind or class as or comparable
- A terminal condition diagnosed by a physician other than the qualified physician issuing the physician certification.
- Chronic nonmalignant pain.

State of FL: Routes of Administration 

- Smokable Flower
- Edibles
- Vaporized oil (Vaporized flower)
- Concentrates
- Oral (e.g. capsules)
- Topical (creams, lotions)
- Sublingual

State of FL: Program History 

- Started in 2017
- Seed to sale integration
- First sale was 2017
- Administered by the FL Department of Health
- Flower sales were added in July 2019
- Edible sales were added in Sept 2020

Office of Medical Marijuana Use: The Numbers

2018	CBD Milligrams	THC Milligrams	Flower Ounces	Dispensaries	Qualified Patients
2-Feb				27	48,862
Began reporting quantity sold					
9-Feb	960,436	13,776,103		27	51,050
16-Feb	668,076	9,765,782		27	52,619
23-Feb	620,084	9,918,553		27	54,124

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2020	CBD MILLIGRAMS	THC MILLIGRAMS	FLOWER OUNCES	Dispensaries	Qualified Patients
3-Jan	1,372,529	59,436,543	15,485.20	213	299,044
10-Jan	2,003,318	77,492,831	18,955.06	216	302,891
17-Jan	2,124,092	80,174,500	20,005.99	218	304,445
24-Jan	2,141,830	79,100,815	20,795.52	222	306,185
31-Jan	1,886,578	80,413,677	21,719.48	222	308,353
January	9,528,347	376,618,366	96,961.25		

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Office of Medical Marijuana Use: The Numbers

2020	CBD Milligrams	THC Milligrams	Flower Ounces	Dispensaries	Qualified Patients
3-Apr	2,698,703	89,525,605	30,997.15	234	331,365
10-Apr	2,353,992	88,508,060	26,829.20	235	333,625
17-Apr	2,669,222	104,923,956	33,313.31	239	333,810
24-Apr	3,289,844	120,835,552	39,287.57	241	334,690

Office of Medical Marijuana Use: The Numbers


2020	CBD Milligrams	THC Milligrams	Flower Ounces	Dispensaries	Qualified Patients
4-Dec	3,594,124	145,218,453	52,949.78	294	447,386
11-Dec	2,835,686	124,050,536	47,794.89	298	450,983
18-Dec	3,154,888	144,868,717	51,867.90	300	454,078
25-Dec	4,806,609	194,929,635	65,566.75	301	456,594
31-Dec	3,426,038	143,426,258	47,938.45	302	459,171
December	17,817,345	752,493,599	266,117.76		

Summary



- ~50% Increase in number of qualified patients
- ~98% Increase in milligrams of THC dispensed
- ~40% Increase in number of dispensaries available


Medical Marijuana Research in FL



HHS Public Access
 Author manuscript
Fla Public Health Rev. Author manuscript; available in PMC 2019 December 30.
 Published in final edited form as:
Fla Public Health Rev. 2019 ; 16: 128–136.

Medical Marijuana Policy Reform Reaches Florida: A Scoping Review

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Journal of Psychoactive Drugs

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Clinical Conditions and Prescription Drug Utilization among Early Medical Marijuana Registrants in Florida

Brianna Costales, Sascha van Boemmel-Wegmann, Almut Winterstein & Richard Segal

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To link to this article: <https://doi.org/10.1080/09500231.2020.1864069>

Table 2. Characteristics of Florida medical marijuana regi:

Characteristic, n (%)	Total
	(N = 7,548)
Age, m (SD)	52.3 (16.4)
< 18 years	128 (1.7)
18–29 years	576 (7.7)
30–49 years	2,307 (31.0)
50–69 years	3,425 (45.9)
≥ 70 years	1,022 (13.7)
Race	
White	6,241 (83.7)
Hispanic, Latino or Spanish	495 (6.6)
Black	354 (4.8)
Other/Unknown [†]	368 (4.9)

Table 3. Chief complaints reported by Florida medical marijuana registry patients at the initial treatment visit by cannabis type ordered.

Chief complaint [†] , n (%)	Cannabis type ordered				p value [‡]
	Total (N = 7,548)	Low-THC cannabis (n = 3,222)	Medical cannabis (MC) (n = 2,600)	Both (THC + MC) (n = 1,636)	
Musculoskeletal disorders & spasms	3,338 (44.8)	1,875 (58.2)	826 (31.8)	637 (38.9)	<.0001
Chronic pain	3,121 (41.9)	1,222 (37.9)	1,239 (47.7)	660 (40.3)	<.0001
Post-traumatic stress disorder (PTSD)	1,049 (14.1)	262 (8.1)	515 (19.8)	272 (16.6)	<.0001
Cancer	873 (11.7)	255 (8.2)	378 (14.5)	230 (14.1)	<.0001
Epilepsy or seizures	456 (6.1)	286 (8.9)	99 (3.8)	71 (4.3)	<.0001
Autoimmune disorders [‡]	229 (3.1)	78 (2.4)	94 (3.6)	57 (3.5)	.0174
Multiple sclerosis (MS)	209 (2.8)	91 (2.8)	54 (2.1)	64 (3.9)	.0020
Parkinson's disease	105 (1.3)	105 (3.3)	54 (2.1)	50 (3.1)	.0195
Cohen's disease	135 (1.8)	40 (1.2)	42 (1.6)	53 (3.2)	<.0001
Glaucoma	101 (1.4)	27 (0.8)	49 (1.9)	25 (1.5)	.0022
Amiotrophic lateral sclerosis (ALS)	26 (0.4)	15 (0.5)	***	***	.2110
Other medical conditions indicated as a qualifying chief complaint					
Mental health disorders (incl. PTSD)	1,264 (17.0)	369 (11.5)	529 (20.4)	366 (22.4)	<.0001
Spinal or neck conditions	1,108 (14.9)	612 (19.0)	342 (13.2)	154 (9.4)	<.0001
Headaches or migraines	780 (10.5)	358 (11.1)	291 (11.2)	131 (8.0)	.0012
Nervous system & neurological disorders	701 (9.4)	255 (7.9)	243 (9.4)	203 (12.4)	<.0001
Sleep disorders	554 (7.4)	156 (4.8)	216 (8.3)	182 (11.1)	<.0001
Gastrointestinal conditions	380 (5.1)	112 (3.5)	169 (6.5)	99 (6.1)	<.0001
Major brain & head injuries	330 (4.4)	122 (3.8)	128 (4.9)	80 (4.9)	.0650
Others	79 (1.1)	19 (0.6)	41 (1.6)	19 (1.2)	.011

Chief complaint [†] , n (%)	Total (N = 7,548)
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Cancer	873 (11.7)
Epilepsy or seizures	456 (6.1)
Autoimmune disorders [‡]	229 (3.1)

State of FL: Summary

- The most frequent chief complaints for seeking MM indicate that the majority of patients presented with musculoskeletal and spasticity-related conditions followed by chronic pain and mental health disorders.
- This is consistent with previous studies of MM registrants that have found chronic pain is the most common medical condition, followed by musculoskeletal conditions, spasticity-related symptoms, anxiety, depression, and PTSD

Paper in Preparation

- Advancing Cannabis Science through a Complementary Care Practice-Based Research Network
- Authors: Nicole Ennis, PhD, Cameron Vance, PharmD, and Russell Bradbury, MS

Description of Data Resources

N	43,802	100%
Sex		
Female	21,931	50.07%
Male	21,843	49.87%
Unknown	28	0.06%
N	Mean	SD
43,802	51.5	16.20

Description of Data Resources

Qualifying Condition	N	%
Comparable Condition	32,040	73.15
PTSD	5,269	12.03
Cancer	3,526	8.05
HIV/AIDS	N= 250	less than half 1%

Description of Data Resources

Self-Reported Comorbid Conditions	N	%
Anxiety	21,675	49.48
Depression	15,080	34.43
Arthritis	11,783	26.90
Muscle Spasms	11,346	25.90
Degenerative Disc Disorder	9,185	20.97
Migraines	7,480	17.08
PTSD	7,239	16.53
Herniated Disc	6,973	15.92
Osteoporosis	6,092	13.91

Summary



- Medical Marijuana research is needed
- Medical Marijuana Research is needed in the state of FL
- Medical Marijuana Research is needed in HIV for priorities identified by patients

So the question remains:

Given the body of evidence to date, how should we use medical marijuana as a complementary care in HIV?

Should we use it at all?



Questions



SHARE PROGRAM Project

