

BACKGROUND

- Multiple Sclerosis is an immune mediated disorder affecting the central nervous system. The result of the demyelination is a wide array of symptoms that can be difficult to manage.
- There are limitations in the pharmacologic management which commonly requires the use of copious medications. Many patients have reported using multiple complementary therapies and polypharmacy to improve symptom management and enhance their quality of life.
- New York State approved the use of medical marijuana on July 5th 2014; however the dispensaries in Western New York did not open until January 2016. One of the first accepted diagnoses was multiple sclerosis, with the main original goal of targeting spasticity and pain.
- There has been increased acceptance of the use of medical cannabis and we have started to use it more in our practice.
- After initiating the therapy, clinically there have been some other perceived improvements that have also been reported.
- Medical Cannabis is a newer therapy. Because of the lack of larger clinical trials and the barriers to obtaining the medication, long-term and outcomes data are lacking.
- There are some limitations to starting this alternative therapy. In our practice, the most reported barrier is the out-of-pocket cost. Due to potential side effects as well, including both fatigue and mood alteration, the patient needs to be closely monitored.

PURPOSE

- The main purpose of our study was to investigate the role of medical cannabis in improving spasticity and other potential symptomatology in patients diagnosed with multiple sclerosis
- We also sought to collect data on other patient outcomes and the use of medical cannabis to enhance understanding of the potential benefits this complementary therapy offers

METHODS

- Patients were consented under the Dent Neuroinformatics Protocol, which was approved by WIRB.
- A **retrospective chart review** of patients (ages 18+) diagnosed with multiple sclerosis and participating in treatment with medical cannabis for symptom management was conducted
- Patients who receive medical cannabis from another clinic or did not have at least one follow-up appointment prior to discontinuation were **excluded**
- A variety of objective and subjective variables that pertain to alleviation of multiple sclerosis symptoms were collected from each of the first **four** appointments following initiation of medical cannabis
- A cross-sectional review was performed using self rating scales conducted during routine clinical practice to determine any gross changes in mental health
- Adverse events to medical cannabis and reason for discontinuation were also recorded

RESULTS

Table 1. Inclusion Overview

Total patients on medical cannabis	159
Never signed consent form	71
Never initiated	9
Prescribed elsewhere	1
Stopped prior to first follow-up	1
Patients Included	77

Table 3. Dosage

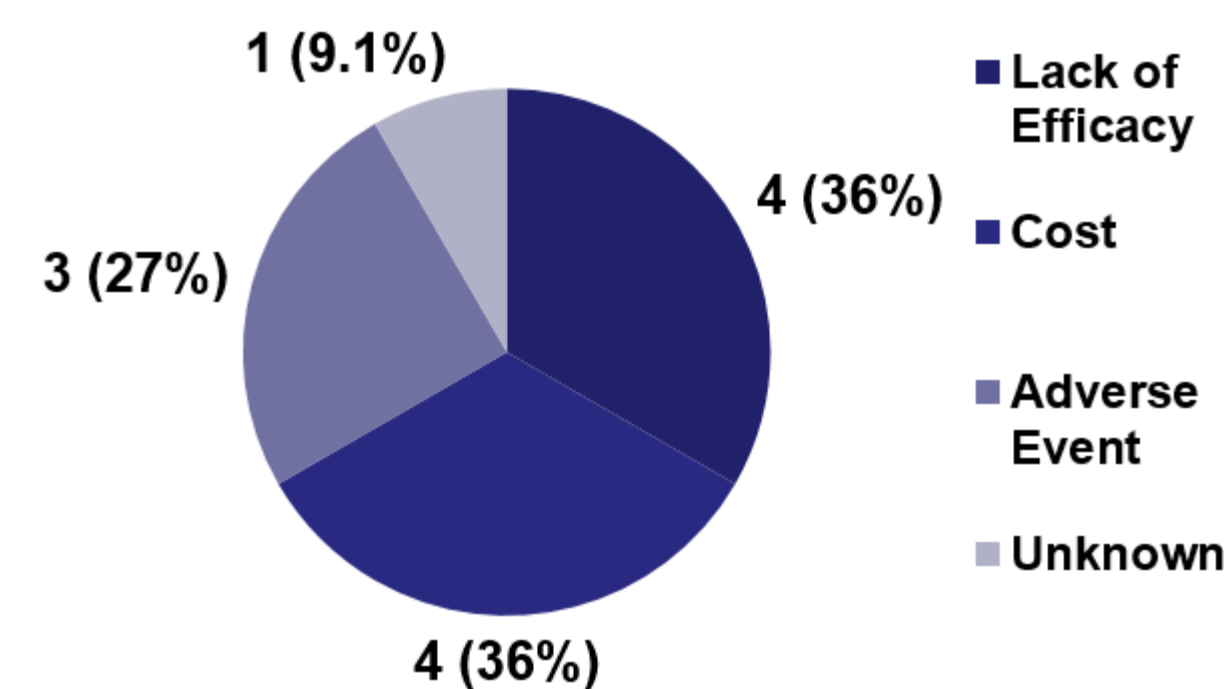
Started at 1:1	54 (70%)
Started at 20:1	20 (26%)
Change in dose throughout therapy	25 (32%)

Table 2. Population Characteristics

Average starting age	49 (±12)
Male	24 (31%)
Female	53 (69%)
Disability	31 (40%)
History of recreational cannabis use	23 (30%)

Indication	
Chronic pain	61 (79%)
Spasticity	24 (31%)
Numbness/ dysesthesia	4 (5%)
Restless Leg	1 (1%)

Figure 1. Reason for Discontinuation



Total number of patients discontinued is 11 (14%), average time to discontinuation 132 ±9 days

Table 5. Cross-sectional Self Rating Scales

Zung Self-Rating Anxiety Scale (n=12)		Beck's Depression Inventory (n=10)	
Average	39±8	Average	11±12
Interpretation	Normal	Interpretation	Mild mood disturbance

The average time from initiation of medical cannabis to submission of self-rating scale 345 days. All patients fell in normal or mild mood disturbance with the exception of one patient who demonstrated extreme depression. This patient was diagnosed with major depressive disorder prior to medical cannabis.

Table 6. Change in Weight

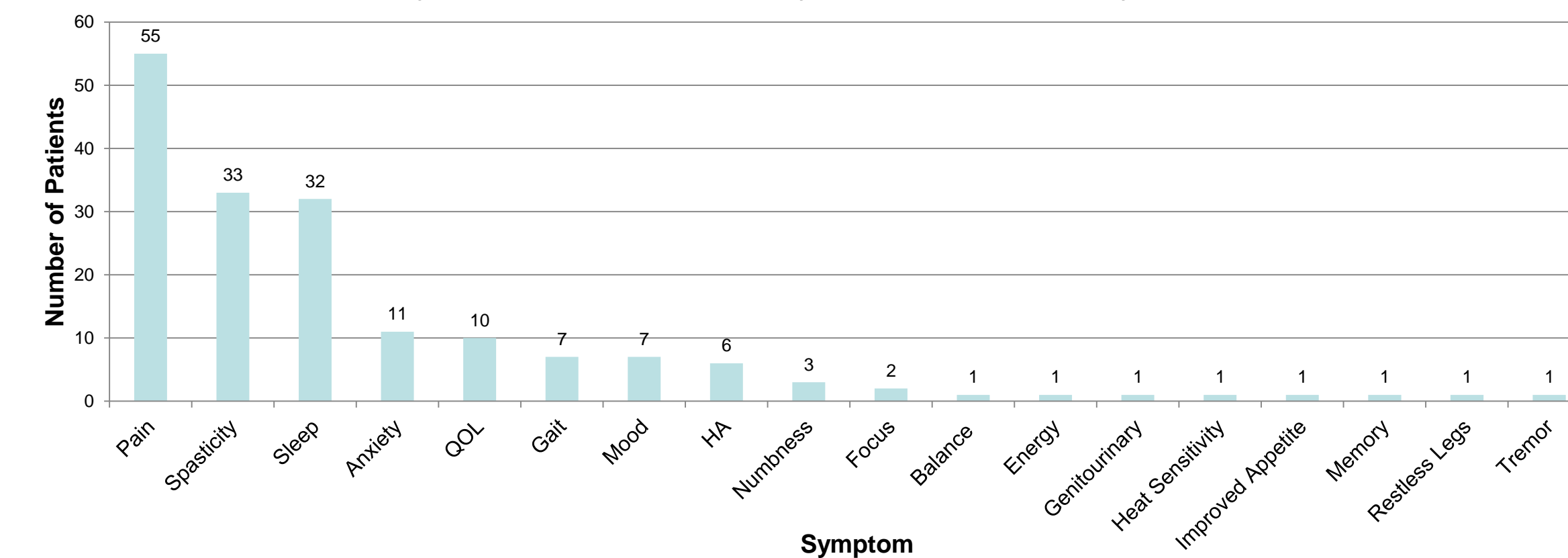
Appointment from initiation	Weight		P	BMI	
	Average days from start	Average change from baseline		Average change from baseline	p
1	92±66	0.55±6	0.46	0.86±1	0.46
2	196±87	-0.12±9	0.99	-0.1±1.6	0.63
3	291±101	0.56±10	0.73	-0.14±2	0.67
4	367±123	-2.12±12	0.47	-0.3±1.7	0.5

Table 4. Reduction of other Medications

Decrease in muscle relaxer	6
Discontinuation of muscle relaxer	5
Decrease in opioid	4
Discontinuation of opioid	4
Decrease in benzodiazepine	3
Discontinuation of benzodiazepine	1
Discontinuation gabapentin	1
Discontinuation zolpidem	1
Decrease stimulant	1

RESULTS

Subjective Improvement of Symptoms Reported by Patients



Objective measurements: No significant changes were found (p>0.05) in patients paired from baseline to follow up in 25 foot timed walk, Montreal Cognitive Assessment, Mini-Mental Status Exam, or pain scale

Table # Adverse Drug Events

Somnolence	5 (6%)	Incontinence	1 (1%)
Dizziness	3 (4%)	Increased appetite	1 (1%)
Feeling "high"/ cognitive impairment	3 (4%)	Stomach upset	1 (1%)
Poor taste (tincture)	2 (3%)	Throat discomfort (vapor)	1 (1%)

All adverse drug events were rated with a Naranjo Score of 1 or greater. Only one event lead to discontinuation (somnolence).

DISCUSSION AND CONCLUSIONS

- Medical cannabis calcium was **well-tolerated** within the multiple sclerosis patient population. The most common adverse reaction observed was somnolence (6%). There was **no significant weight gain** reported at each appointment assessed.
- Low rate of discontinuation** (14%) was observed, most frequently due to cost and lack of efficacy.
- Subjective improvement endorsed by patients was extensive, with alleviation of symptomatology seen most in pain, spasticity, and anxiety. In addition, patients were able to **decrease and discontinue other medications** including muscle relaxers, opioids, and benzodiazepines. This is further indicative of symptom improvement.
- Further prospective studies are needed.

REFERENCES

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