



# Prevalence and Impact of Cannabinoid Use in Patients with Spinal Disorders



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## Learning Objective

This work prospectively characterizes the effects of cannabinoid exposure, the prevalence, and perceived analgesic utility of cannabinoid use in patients with spinal disorders. Through an observational study, we will enhance literature on the prevalence and impact of cannabinoid use in patients with spine disease.

## Background

- Chronic back pain with trauma or surgery as its origin is prevalent in the United States. As many as 1 in 4 Americans suffer from chronic back pain.
- While there is literature on medical cannabis for pain management, literature on cannabinoid exposure on bone and orthopaedic conditions, specifically spine, is limited.
- The Centers for Disease Control and Prevention (CDC) has advised that opioids be used sparingly, necessitating a safe, effective, evidence-based pain relief.
- High concentrations of endocannabinoid system (ECS) G protein-coupled receptors, CB1 and CB2, have been identified on neurons and immune cells, respectively [1]. Recent studies suggest that ECS affects regulation of bone mass maintenance through CB1 and CB2 receptor activity and suggest CB1 and CB2 have a role in neuro- and immunomodulation [1].

## Methods

- Patients 18 years or older with a history of spine fusion at UCLA since 2013 were asked to complete a questionnaire via REDCap on a patient's own personal device.
- As of June 2021, the IRB was updated to allow for patients who completed the survey to be entered into a raffle for a \$100 Amazon giftcard. Patients were called to increase the rate of survey respondents.
- The survey includes questions regarding demographics, reasons a patient is seeing their spine doctor, level of pain, and questions regarding products medically used for pain.
- The survey also asks questions regarding recreational, personal, and medical use of marijuana and cannabis products, whether marijuana or cannabis use reduces pain, and effects patients have had following cannabis use. Patients will be asked for quality of life scores including PROMIS Pain Behavior, Pain Interference, and Physical Function.

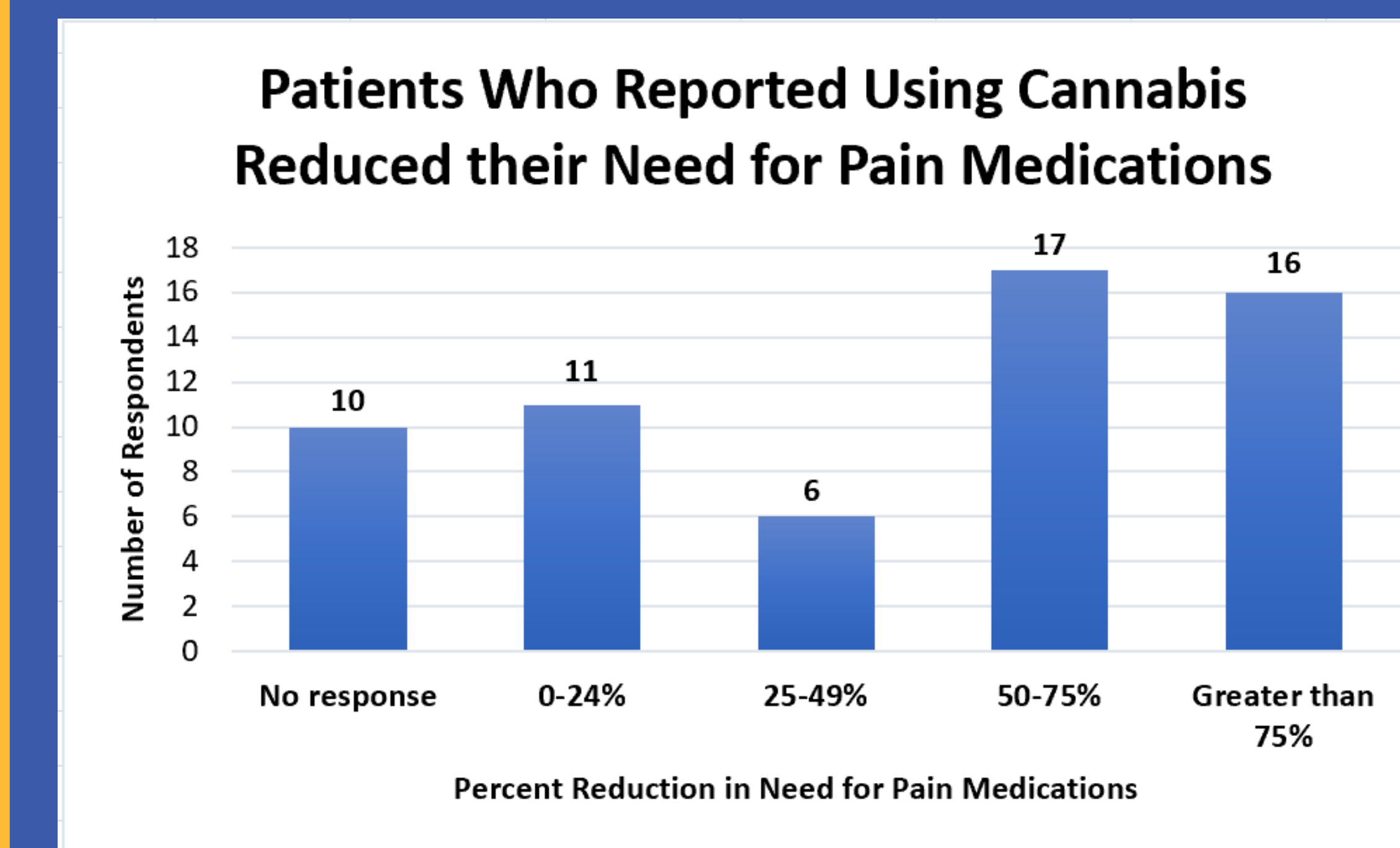
## Results

- Analysis was done via observational study; therefore, no power analysis was performed. The data was collected in REDCap and analyzed using T-Tests for equal variance to analyze PROMIS Scores.
- 23.1% of patients reported using cannabis daily and above [Table 1]. 47% of patients reported using cannabis for pain more than once a month [Table 1].
- 55.5% of spine patients reported a 50% or greater reduction in the use of pain medications after using cannabis [Figure 1].
- PROMIS Scores for patients who underwent spine surgery indicate both cannabis users and nonusers experience more pain and more difficulties with physical function than the general population. No statistical significance could be evaluated for PROMIS Scores, likely due to a small sample size [Figure 2].

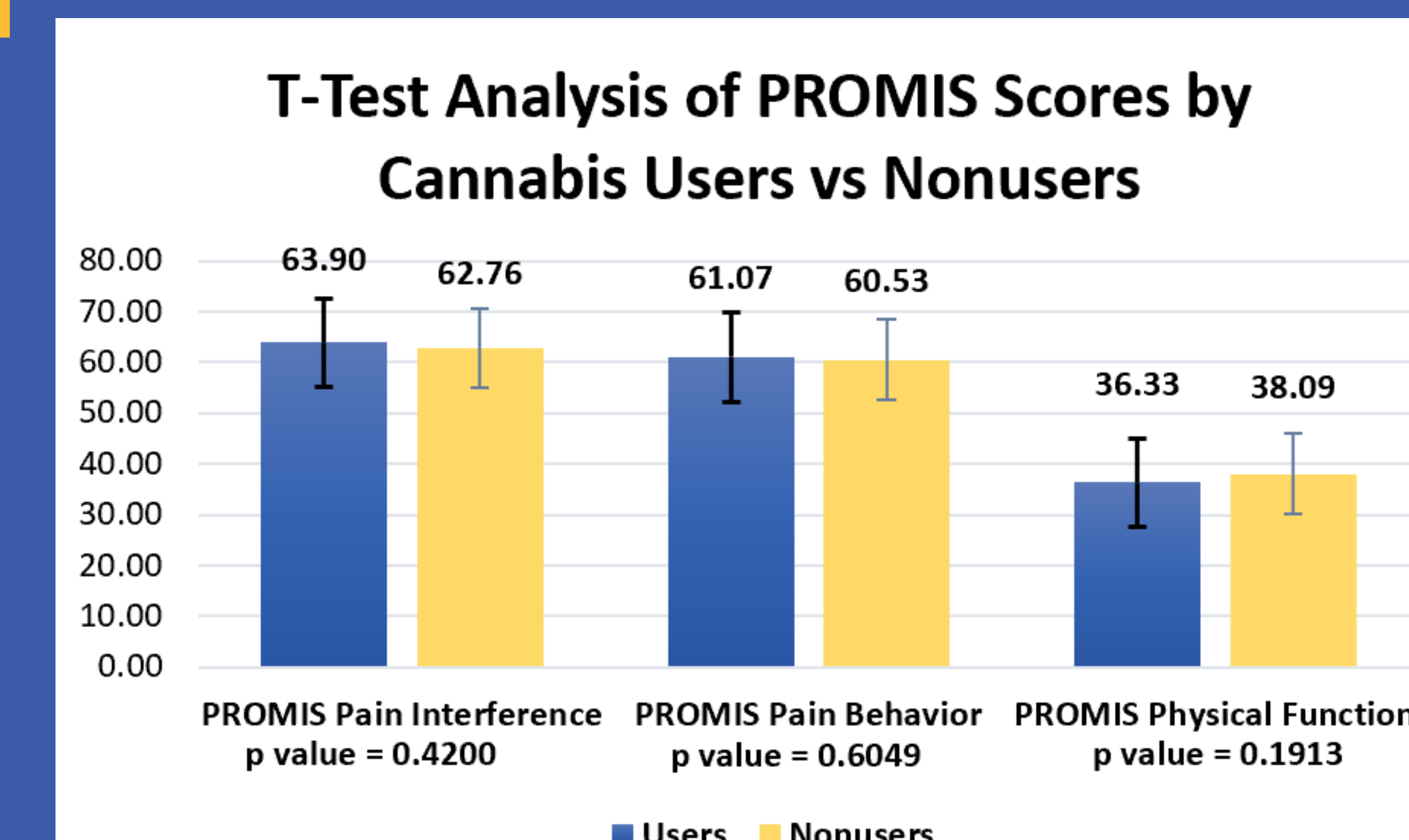
**Table 1: Cannabinoid Use Frequency and Patient Characteristics in Spine Clinic Patients**

Variable	Values
n	118
Gender (%)	
Female	70 (59.8)
Male	47 (40.2)
Age (mean(sd))	57.36 (13.77)
Ethnicity (%)	
Hispanic	9 (7.9)
Non-Hispanic	105 (92.1)
Race (%)	
Race = White	98 (83.1)
Race = Asian	9 (7.6)
Race = Black	10 (8.5)
Race = Latino/a	6 (5.1)
Race = Pacific Islander/ Native Hawaiian	1 (0.8)
Race = Native American/Alaskan American	2 (1.7)
Race = Middle Eastern	1 (0.8)
Cannabis use (%)	
Never	21 (17.9)
No but in the past	36 (30.8)
Less than once per month	4 (3.4)
Once per month	1 (0.9)
2-3 times per month	6 (5.1)
Once a week	6 (5.1)
2-3 times a week	13 (11.1)
4-6 times a week	3 (2.6)
Once per day	15 (12.8)
More than once per day	12 (10.3)

**Figure 1: Pain Relief From Cannabis Use.** Patients reported how much using cannabis (through vaporizing, topicals, sublingually, food consumption, drink consumption, smoking, or inhaling) reduced their need for medications such as NSAIDs, by percentage of reduction in need for pain medications.



**Figure 2: Patient PROMIS Pain Behavior, Pain Interference, and Physical Function Scores.** PROMIS Scores reflect patient quality of life. Lower PROMIS Pain interference and pain behavior scores indicate less pain for the patient; lower PROMIS Physical Function scores indicate less functionality [2].



## Discussion

- As of 2021, 35 states have legalized medical marijuana. Recreational use is legal in 14 states, the District of Columbia, the Northern Mariana Islands, and Guam. Another 16 states and the U.S. Virgin Islands have decriminalized marijuana use, according to the 2019 National Conference of State Legislatures [1].
- There are a multitude of products without FDA approval and absolutely no safety or efficacy research being marketed for various medical uses.
- With changes to legal policies, patient perception to medical cannabis has shifted to more favorable [3].
- Cannabinoids, if effective for pain relief, could potentially reduce the opioid burden that is of top concern for many orthopaedic surgeons [4].
- With over 50% of patients reporting cannabis use, and 55.5% of patients reporting a 50% or greater reduction in pain medication use after cannabis use, cannabinoid use in spinal patients seems promising.

## Limitations

- Survey response was initially low, with only 5.15% of respondents, so an incentive was added.
- Due to the COVID-19 pandemic, in person consent was limited.

## Conclusion

- A majority of spine patients already use cannabinoids for pain management, and many are amenable to use cannabis for pain.
- Among spine patients, it was found that cannabis use reduced pain levels to a point where significantly less pain medication was used.
- There was no statistical difference in PROMIS Scores between users and nonusers, despite patient perception. Future directions include further analysis on this finding.**
- Future research is needed to focus on improving methodologic quality and study reporting, so that protocols to optimize pain control while minimizing harmful effects can be determined.
- The impact of this project as it continues will be pioneering in giving providers and patients relevant, usable information regarding cannabinoid use in patients with spinal disorders.

## References

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