

## 1. Medical condition proposed:

Non-24 sleep disorder

## 2. Provide justification for why this medical condition should be included as a qualifying debilitating medical condition for the use of medical marihuana. Be specific as to why medical marihuana should be used for this condition.

The review panel has the ability to add any medical condition or treatment. The medical condition or treatment does not have to be severe, chronic or debilitating.

MCL 333.26423(b)(3) Any other medical condition or its treatment approved by the department, as provided for in section 6(k).

<http://legislature.mi.gov/doc.aspx?mcl-333-26423>

There are no studies on marijuana for treating RLS, but there is considerable anecdotal evidence from patients as to its effectiveness. Typically, only 1 or 2 puffs of a marijuana cigarette or vaporizer is sufficient to relieve RLS symptoms. It is not clear how long the relief lasts, as most patients use this at bedtime, but they do report the very rapid disappearance of their symptoms, which then helps them fall asleep.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3480566/>

The Institute of Medicine comprehensive medical marijuana 1999 report states:

Victims of spinal cord injury reporting at IOM workshops noted that smoking marijuana reduces their muscle spasms, their nausea, and the frequency of their sleepless nights.

Cannabinol also lowers body temperature and increases sleep duration in mice.

The most commonly reported effects of smoked marijuana are a sense of well-being or euphoria and increased talkativeness and laughter alternating with periods of introspective dreaminess followed by lethargy and sleepiness (see reviews by Adams and Martin, 1996, Hall and Solowij, and Hall et al. ).

About 90% of MS patients eventually develop spasticity. There are an estimated 2.5 million MS patients worldwide, and spasticity is a major concern of many patients and physicians. Spasticity is variably experienced as muscle stiffness, muscle spasms, flexor spasms or cramps, muscle pain or ache. The tendency for the legs to spasm at night (flexor spasms) can interfere with sleep.

Spasticity occurring at night can be very disruptive to sleep. Thus, a long-lasting medication would be especially useful for MS patients at bedtime--when drowsiness

would be a beneficial rather than an unwanted side effect and mood-altering effects would be less of a problem. One caution is related to the effects of THC on the stages of sleep, which should be evaluated in MS patients who have sleep disturbances. If THC is proven to relieve spasticity, a pill might be the preferred route of delivery for nighttime use because of its long duration of action. Compared to the currently available therapies, the long half-life of THC might allow for a smoother drug effect throughout the day. The intensity of the symptoms resulting from spasticity, particularly in MS, can rapidly increase in an unpredictable fashion such that the patient develops an "attack" of intense muscle spasms lasting minutes to hours. An inhaled form of THC (if it were shown to be efficacious) might be appropriate for those patients.

<https://www.nap.edu/catalog/6376/marijuana-and-medicine-assessing-the-science-base>

Mild or moderate leg spasms would not be covered by "severe and persistent muscle spasms", under the MMMA, yet they are "very disruptive to sleep" and would cause insomnia.

The National Academies of Medicine reviewed all marijuana research from 1999-2016 and published a comprehensive report on cannabinoids and health earlier this year.

There is moderate evidence that cannabis or cannabinoids are effective for:

- Improving short-term sleep outcomes in individuals with sleep disturbance associated with obstructive sleep apnea syndrome, fibromyalgia, chronic pain, and multiple sclerosis (cannabinoids, primarily nabiximols) (4-19)

<https://www.nap.edu/catalog/24625/the-health-effects-of-cannabis-and-cannabinoids-the-current-state>

CDC says "Insufficient Sleep Is a Public Health Problem".

<https://www.cdc.gov/features/dssleep/index.html>

The National Department of Transportation estimates drowsy driving to be responsible for 1,550 fatalities and 40,000 nonfatal injuries annually in the United States.

[https://one.nhtsa.gov/people/injury/drowsy\\_driving1/Drowsy.html](https://one.nhtsa.gov/people/injury/drowsy_driving1/Drowsy.html)

A lack of sleep among the U.S. workforce is costing approximately \$411 billion and losing 1.2 million working days per year, a new study has found.

<http://fortune.com/2016/11/30/sleep-productivity-rand-corp-411-billion/>

[http://www.rand.org/pubs/research\\_reports/RR1791.html](http://www.rand.org/pubs/research_reports/RR1791.html)

Medical Marijuana is used by qualifying patients who have multiple sclerosis and PTSD to alleviate insomnia. All adults should be able to have cannabis sativa as an optional safe remedy for insomnia. Why would you allow one condition to be qualified to alleviate insomnia while another condition is not? This petition would allow all adults suffering from insomnia to use medical marijuana.

The Medical Marijuana Review Board and the Director of LARA are not recommending any condition or treatment for medical marijuana. A yes vote, and approval by the department of a condition, merely protects patients from arrest or penalty. Some people are currently using medical marijuana illegally to treat insomnia. Ultimately, the decision of which medication to use is between a physician and patient.

<https://www.fda.gov/drugs/drugsafety/postmarketdrugsafetyinformationforpatientsandproviders/ucm101557.htm>

The most widely prescribed medication for insomnia is Ambien, which can cause its users to sleep walk, sleep drive, eat and other actions while unconscious.

[http://www.huffingtonpost.com/2014/01/15/ambien-side-effect-sleepwalking-sleep-aid\\_n\\_4589743.html](http://www.huffingtonpost.com/2014/01/15/ambien-side-effect-sleepwalking-sleep-aid_n_4589743.html)

Ambien, a drug that can make people sleepwalk and get into cars and drive - causing numerous accidents and deaths, is Schedule 4. Marijuana is Schedule 1. Ambien was first discovered in the early 1980s and used for insomnia in France in 1988, USA in 1992.

<http://www.emedexpert.com/facts/zolpidem-facts.shtml>

The choice for relief of insomnia is between an FDA approved drug that is 30 years old and still has unknown side effects, or medical marijuana which has been used safely and effectively by humans for thousands of years by every country inhabited by humans on the entire planet.

Ambien causes cancer, medical marijuana does not.

This population-based study revealed some unexpected findings, suggesting that the use of zolpidem may be associated with an increased risk of subsequent cancer. Further large-scale and in-depth investigations in this area are warranted.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3498427/>

Comparing medical marijuana to other insomnia medications shows that medical marijuana has less side effects, no toxicity and is safer.

Benadryl is another FDA approved treatment for Insomnia:

Overall driving performance was the poorest after taking diphenhydramine, and participants were most drowsy after taking diphenhydramine (before and after testing). The authors concluded that diphenhydramine clearly impairs driving performance, and may have an even greater impact than does alcohol on the complex task of operating a motor vehicle.

<https://one.nhtsa.gov/people/injury/research/job185drugs/diphenhydramine.htm>

While the study of marijuana and driving is clear:

<http://blog.caranddriver.com/marijuana-doesnt-pose-significant-risk-in-car-crashes-nhtsa-says/>  
<https://one.nhtsa.gov/people/injury/research/job185drugs/cannabis.htm>

Which reports on a study by NHTSA:

When factoring age, sex, and race, there was no “significant increased risk of crash involvement” due to marijuana use.

[http://www.nhtsa.gov/staticfiles/nti/pdf/812117-Drug\\_and\\_Alcohol\\_Crash\\_Risk.pdf](http://www.nhtsa.gov/staticfiles/nti/pdf/812117-Drug_and_Alcohol_Crash_Risk.pdf)

A general consensus has developed from population-based studies that approximately 30% of a variety of adult samples drawn from different countries report one or more of the symptoms of insomnia.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1978319/>

In 1889, Dr Ed Birch published case reports of patients and documented that cannabis was a “well known remedy for insomnia” in the Lancet journal.

I prescribed the cannabis simply with a view to utilising a well-known remedy for insomnia,  
but it did much more than procure sleep.

A safety profile of Medical Marijuana can be found in the first year report of the Minnesota medical marijuana program. The Minnesota Department of Health surveyed 1500+ patients enrolled in the program.

Adverse Side Effects: At this point, the safety profile of the medical cannabis products available through the Minnesota program seems quite favorable. Approximately 20-25% of enrolled patients report negative physical or mental side effects of some kind, with the majority –

around 60% - reporting only one and 90% reporting three or fewer. The vast majority of adverse side effects, around 90%, are mild to moderate in severity. An assessment of the 30 patients reporting severe side effects, meaning "interrupts usual daily activities," found no apparent pattern of patient age, medical condition, or type of medical cannabis used. The most common adverse side effects are dry mouth, drowsiness, and fatigue. Fortunately, up to the present no serious adverse events (life threatening or requiring hospitalization) have been reported.

<http://www.health.state.mn.us/topics/cannabis/about/firstyearreport.html>

Medical Marijuana's mild to moderate side effects of dry mouth, drowsiness and fatigue are easily tolerated by the vast majority of patients.

The Mayo Clinic website has assembled dosage information on Medical Marijuana.

<http://www.mayoclinic.org/drugs-supplements/marijuana/dosing/hrb-20059701>

NIDA finds it difficult to put the words together, but finally begrudgingly admits there is no gateway theory of marijuana use.

These findings are consistent with the idea of marijuana as a "gateway drug." However, the majority of people who use marijuana do not go on to use other, "harder" substances.

<https://www.drugabuse.gov/publications/research-reports/marijuana/marijuana-gateway-drug>

NIDA finds it very difficult to backtrack on the propaganda they spew forth. When other researchers tried to duplicate the results of the first study on marijuana and IQ points, they were unable to find any IQ loss due to marijuana use. I hope that any knowledge you have on marijuana is up to date, and that you are paying attention when NIDA's biased research grants backfire on them, over and over again.

In a recent study sponsored by NIDA and the National Institute of Mental Health, teens who used marijuana lost IQ points relative to their nonusing peers. However, the drug appeared not to be the culprit. The new findings contribute to an ongoing scientific exploration of the drug's impact on users' cognition.

<https://www.drugabuse.gov/news-events/nida-notes/2016/08/study-questions-role-marijuana-in-teen-users-iq-decline>

As evidenced by the included medical marijuana patient surveys in other states and countries, adults are using medical marijuana to treat this disease. Patients will continue to use medical marijuana to treat symptoms whether or not you approve this condition. Approving this condition to the list of Qualifying Conditions in the MMMA has the only effect of protecting sick people from arrest or penalty. These patients are currently breaking the law by using a safe and non-toxic plant that they can grow themselves. The alternative are prescriptions that cost thousands of dollars per month, that the FDA approves even if it is toxic and poisons and kills many Americans each year.

**3. Provide a summary of the evidence that the use of medical marihuana will provide palliative or therapeutic benefit for this medical condition or is a treatment for this condition.**

1. 10.1002/cbdv.200790150

Sativex patients and their caregivers have remarked to their physicians how the medicine had transformed their lives through its ability to allow them more restful sleep, increase their daytime level of function, and markedly improve their quality of life. Its addition to the pharmacopoeia may be welcomed by patients, families, and physicians.

2. <https://harmreductionjournal.biomedcentral.com/articles/10.1186/1477-7517-2-18>

Approximately three quarters of participants (71%) claimed to have experienced a return of their symptoms or condition on stopping cannabis, especially: pain (53% of those who claimed a return of symptoms), depression or anxiety (30%), insomnia (11%), spasm (10%) and nausea/vomiting or lack of appetite (9%).

Positive ratings were ("great" or "good" relief) were also typical for its ability to relieve specific symptoms (Table 3). In addition, several other symptoms were noted, primarily insomnia (13% used for insomnia; of these 82% derived "great" relief).

3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3998228/>

Ninety-seven per cent of respondents used cannabis primarily for chronic pain. Average pain improvement on a 0–10 pain scale was 5.0 (from 7.8 to 2.8), which translates to a 64% relative decrease in average pain. Half of all respondents also noted relief from stress/anxiety, and nearly half (45%) reported relief from insomnia. Most patients (71%) reported no adverse effects, while 6% reported a cough or throat irritation and 5% feared arrest even though medical cannabis is legal in Hawai'i. No serious adverse effects were reported.

These results suggest that Cannabis is an extremely safe and effective medication for many chronic pain patients. Cannabis appears to alleviate pain, insomnia, and may be helpful in relieving anxiety. Cannabis has shown extreme promise in the treatment of numerous medical problems and deserves to be released from the current Schedule I federal prohibition against research and prescription.

4. 10.1016/j.smr.2007.12.004

Several studies have shown that acute administration of THC decreases sleep latency,<sup>38</sup> and is associated with reports of greater ease in getting to sleep

5. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3929256/>

In addition, sleep improvement appears to be a primary motivator for coping-oriented use. Additional research is needed to examine the health consequences of this pattern of cannabis use and whether alternative sleep promoting interventions (e.g. CBT-I) could reduce the reliance on cannabis for adequate sleep among those with PTSD.

6. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3673028/>

Mental health disorders were the next largest group of diagnoses made (22.9%), followed closely by sleep disorders (21.3%).

Non-prescription therapies tried by applicants seeking medicinal marijuana allowances included physical therapy (48.6%), chiropractic services (37.2%), surgery (21.9%), psychological counseling (20.7%), and acupuncture (19.6%). Thus, these data do not suggest that applicants immediately seek marijuana recommendations as the first strategy to deal with their symptoms. In many cases, these individuals tried more traditional forms of medicine.

7. <https://www.ncbi.nlm.nih.gov/pubmed/26195653>

While further research into cannabinoid treatment effects on PTSD symptoms is required, the evaluated evidence indicates that substantial numbers of military veterans with PTSD use cannabis or derivative products to control PTSD symptoms, with some patients reporting benefits in terms of reduced anxiety and insomnia and improved coping ability.

8. [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(00\)30567-0/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(00)30567-0/fulltext)

I prescribed the cannabis simply with a view to utilizing a well-known remedy for insomnia, but it did much more than procure sleep.

9. <https://www.ncbi.nlm.nih.gov/pubmed/12185373>

In a survey of 15 chronic pain patients who admitted to using cannabis medicinally pain, sleep and mood were most frequently improved, while doses used were modest. Small doses of smoked cannabis may improve pain, mood and sleep in some patients with chronic pain.

10. 10.1213/ANE.0b013e3181c76f70

Thirty-one subjects were enrolled and 29 completed the trial (26 women, mean age 49.5 yr). Although sleep was improved by both amitriptyline and nabilone, nabilone was superior to amitriptyline (Insomnia Severity Index difference = 3.2; 95% confidence interval = 1.2-5.3). Nabilone is effective in improving sleep in patients with FM and is well tolerated. Low-dose nabilone given once daily at bedtime may be considered as an alternative to amitriptyline.

11. <http://www.health.state.mn.us/topics/cannabis/about/firstyearreport.html>

At this point, the safety profile of the medical cannabis products available through the Minnesota program seems quite favorable. Approximately 20-25% of enrolled patients report negative physical or mental side effects of some kind, with the majority – around 60% - reporting only one and 90% reporting three or fewer. The vast majority of adverse side effects, around 90%, are mild to moderate in severity. An assessment of the 30 patients reporting severe side effects, meaning “interrupts usual daily activities,” found no apparent pattern of patient age, medical condition, or type of medical cannabis used. The most common adverse side effects are dry mouth, drowsiness, and fatigue. Fortunately, up to the present no serious adverse events (life threatening or requiring hospitalization) have been reported.

12. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4845302/>

Studies examining the effect of cannabis on objective sleep measurements obtained either by an experienced observer rating sleep by polysomnography (PSG) largely confirm the subjective reports. For instance, an observer-rated study showed that administration of 10, 20, or 30 mg of THC decreased total time to fall asleep, and a PSG study showed both shorter sleep latency (SL) , and decreased time awake after sleep onset (WASO).

13. <https://www.ncbi.nlm.nih.gov/pubmed/28749704>

At Time 1, 25% of students reported using at least one substance (alcohol, marijuana, or over-the-counter medications) for sleep aid in the past two weeks.

14. <https://www.ncbi.nlm.nih.gov/pubmed/4337346/>

Although subjective effects of oral THC are reported to appear within 30 to 60 minutes, the increment in Stage 4 sleep suggests that the onset of drug action occurred about 3 hours after ingestion. These observations indicate the insensitivity of the latency to sleep onset measure to any initial hypnotic properties of THC, since subjects were asleep well before the drug could have taken effect. The decrease in time spent awake after sleep onset and the increase in Stage 4 sleep, however, could be interpreted as indicating, respectively, less disturbed and "deeper" sleep, thereby empirically supporting the attribution of sedative properties to THC.

15. 10.1016/j.neuropharm.2011.08.013

Patients with post-traumatic stress disorder (PTSD) frequently complain of having sleep disturbances, such as insomnia and rapid eye movement (REM) sleep abnormality. Cannabidiol (CBD), a psycho-inactive constituent of marijuana, reduces physiological non-REM (NREM) sleep and REM sleep in normal rats, in addition to generating its anxiolytic effect.

16. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5101100/>

Cannabidiol oil, an increasingly popular treatment of anxiety and sleep issues, has been documented as being an effective alternative to pharmaceutical medications. This case study provides clinical data that support the use of cannabidiol oil as a safe treatment for reducing anxiety and improving sleep in a young girl with posttraumatic stress disorder.



17. <https://www.ncbi.nlm.nih.gov/pubmed/24095000>

Patients reported using cannabis to treat multiple symptoms, with sleep, pain, and anxiety being the most common. Cannabis was perceived to provide effective symptoms relief across medical conditions. Patterns of use were also consistent across medical conditions. Notable differences were observed with regard to modes of access.

18. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4758425/>

Marijuana was customarily used to treat insomnia and as an antiemetic before the onset of specific therapies in the 1930s.

19. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1654142/>

Cannabis, in herbal form, is widely used as self-medication by patients with diseases such as HIV/AIDS and multiple sclerosis suffering from symptoms including pain, muscle spasticity, stress and insomnia.

20. <https://www.ncbi.nlm.nih.gov/pubmed/28749704>

Undergraduate students (N = 171; mean age = 19 years [SD = 1.35], 32% male, 74% White) enrolled in a four-year university in the northeastern United States. 25% of students reported using at least one substance (alcohol, marijuana, and/or over-the-counter medications) for sleep aid in the past two weeks.

21. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3068013/>

Even less attention has focused on inhaled “street” cannabis. Data show that 36%–43% of patients with MS have at some time smoked cannabis. The figure for current use, 14%–18%, is more modest, but indicates that a substantial minority of patients with MS find cannabis helpful for relief from pain, spasticity, insomnia, bladder problems, tremors, and emotional distress.

22. <https://www.ncbi.nlm.nih.gov/pubmed/15184623/>

The symptoms reported by medical cannabis users to be most effectively relieved were stress, sleep, mood, stiffness/spasm, and pain.

23. 10.1016/j.jns.2008.06.037

The VAS evaluation of self-reported clinical modifications after cannabis medicinal use showed a wide range of improvement that was mainly perceived in sleep disturbances, pain, tremor, and muscle spasms

24. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4578915/>

Many people suffering from PTSD often have interrupted sleep, with many seeking medical marijuana as a means of helping them treat their sleep issues

25. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4157067/>

Our survey reports that cannabidiol-enriched cannabis is behaviorally well tolerated and may have beneficial effects on cognition and mood. Many parents reported that their children

experienced better sleep, increased alertness, and better mood while taking cannabidiol-enriched cannabis. These beneficial side effects are rarely reported with pediatric use of other AEDs (anti epileptic drugs).

26. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5312634/>

Finally, preliminary clinical trials suggest that high-dose oral CBD (150–600 mg per day) may exert a therapeutic effect for epilepsy, insomnia, and social anxiety disorder. Nonetheless, such doses of CBD have also been shown to cause sedation.

27. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5165161/>

In addition, we have assessed the role of the cannabinoid system and marijuana constituents in neuroprotection as well as considered other beneficial effects of marijuana. Marijuana has been shown to improve nonmotor symptoms of PD such as depression, pain, sleep, and anxiety. Moreover, components of cannabis have been demonstrated to have neuroprotective effect due to their anti-inflammatory, antioxidative, and antiexcitotoxic properties.

#### Effect of Cannabinoids on Sleep Disorders

Sleep disorders are common in PD patients and negatively affect the quality of life. The reported prevalence ranges from 25% to 98% and this wide variation could be due to differences in study design and diagnostic tools used [297]. The causes of the sleep disturbances in PD are multifactorial and include neurodegeneration and the medications used to treat motor symptoms of PD [298]. Various sleep disorders including rapid eye movement sleep behavior disorder, insomnia, sleep fragmentation, excessive daytime sleepiness, restless legs syndrome, and obstructive sleep apnea have been described in PD patients [299, 300]. Cannabidiol, the major nonpsychotic component of marijuana, has been reported to improve rapid eye movement sleep behavior disorder in PD patients [68, 69]. Marijuana has also been shown to improve nonmotor symptoms of PD including sleep [65]. In clinical trials involving 2000 patients with various pain conditions, nabiximols has been demonstrated to improve subjective sleep parameters [301]. Thus, marijuana could be used to enhance the quality of life of PD patients by alleviating sleep disorders and pain.

28. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4604191/>

The 1854, the US Dispensary listed cannabis to treat neuralgia, depression, pain, muscle spasms, insomnia, tetanus, chorea, insanity, and other disorders.

29. <https://www.ncbi.nlm.nih.gov/pubmed/26317379>

367 medical marijuana patients in Arizona were surveyed.

145 patients reported using medical marijuana for treatment of Insomnia.

31 patients reported using medical marijuana for treatment of Sleep Apnea.

General relief from Insomnia symptoms was 82.7% and 58.1% for Sleep Apnea

Relief by medical marijuana compared to other medications was 77.4% for Insomnia and 85% for Sleep Apnea.

Less frequent use of other medications was 81.9% for Insomnia and 66.6% for Sleep Apnea.

30. <https://www.ncbi.nlm.nih.gov/pubmed/28189912>

In regards to conditions, pain-related conditions were the most common, reported by 53% of participants (n = 144; chronic pain 36% (n = 98), arthritis 12% (n = 32), headache 5% (n = 14)). The second most prominent class was mental health (eating disorder, PTSD & psychiatric disorder), reported by 15% (n = 41). Other prominent conditions included gastrointestinal disorders (11%, n = 29), insomnia (7%, n = 18) and multiple sclerosis (4%, n = 11).

In regards to symptoms; the most highly endorsed were chronic pain (73%, n = 197), stress (60%, n = 162), insomnia (57%, n = 155), depression (46%, n = 126) and headache (32%, n = 87). Gastrointestinal (GI) issues also featured prominently, with 29% (n = 79) citing appetite loss and another 29% (n = 79) nausea. Cannabis was perceived to be very effective at symptom relief, with 95% (n = 257) reporting that it “often” or “always” helped alleviate their symptoms.

31. 10.1111/j.1742-1241.2004.00271.x

Over the period 1998–2002, 3663 questionnaires were distributed, and 2969 were returned (81% response rate).

14 patients reported using medical marijuana to treat Insomnia for (1–8) years.

Overall Effectiveness. Of 948 reported users, 648 (68%) reported that cannabis made their symptoms overall much better, 256 (27%) said a little better, 36 (4%) said no difference and eight subjects said a little worse (four subjects) or much worse (four subjects).

Effectiveness Compared to Other Medications. When asked how cannabis compared to other medications overall, 412 of 916 subjects (45%) said it worked much better than prescribed medications, 261 (28%) said it was somewhat better and 45 (5%) said it was about the same; only 27 subjects said that prescription medicines worked better than cannabis (18 somewhat better and nine much better). One hundred and seventy-one (19%) subjects said it was impossible to tell.

Side Effects Compared to other Medications. When asked to compare the undesirable effects of cannabis to those of prescribed medicines, 872 subjects responded, of whom six found that cannabis produced much worse side effects, 23 found somewhat worse side effects and 54 said the side effects were about the same. Two hundred and sixty-four (30%) subjects stated that side effects of prescribed medicines were somewhat worse and 294 (34%) said they were much worse. Two hundred and thirty-one (26%) stated that it was impossible to tell.

Effects on Other Medication Use. Of the 909 subjects

responding to this question, 374 stated that their use of cannabis had changed their use of other medications, while 521 said it had not. Fourteen were not coded.

Return of Symptoms on Stopping. Of the 876 subjects responding, 673 said their symptoms returned or got worse when they stopped using cannabis, and 203 denied any worsening on stopping cannabis.

32. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4277530/>

Most of the respondents (from the clinic and online groups) reported that cannabis improved their mood, pain, muscle spasms, and sleep.

33. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2683812/>

Sleep problems

Nine teens in our sample described using marijuana to help them sleep. The "trouble" they had with sleeping was a constant problem that many had experienced for years. One 16-year old, who also experienced mild depression, indicated that she "stopped sleeping for two years." Not only did the problem affect their school performance, but it was deeply disturbing to them. As another female described,

"I have a really hard time sleeping. I can lay there for about four to five hours, just laying there. And I just finally had it, and I just feel like screaming I don't want to wake anyone up. So I go downstairs and ask my gran or my brother [for some marijuana] or I have a roach or two sitting around." [16 years, non-daily use]

Although one teen indicated that she had spoken to her mother about her problems sleeping, others indicated that the adults in their lives did not offer any support.

"I have trouble going to sleep and waking up...My mum wanted to get the doctor to put me on sleeping pills but he said at such a young age it would cause like an addiction to them...I've had these problems since elementary school...I just, I can't go to sleep at night and then I like to sleep during the day." [Female, 14 years, non-daily use]

Many teens turned to pot and found almost immediate benefits in helping them sleep. Likened to a "magic sleeping pill" by one young male, the teens found it calmed their "busy minds," helped them relax and fall asleep quickly.

34. <https://www.ncbi.nlm.nih.gov/pubmed/11210205>

This article reports on an exploratory study of medical cannabis users. Interviews were completed with 50 self-identified medical cannabis users recruited through notices in newspapers and on bulletin boards. They reported using cannabis for a variety of conditions including HIV-AIDS-related problems, chronic pain, depression, anxiety, menstrual cramps, migraine, narcotic addiction as well as everyday aches, pains, stresses and sleeping difficulties.

35. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3480566/>

There are no studies on marijuana for treating RLS, but there is considerable anecdotal evidence from patients as to its effectiveness. Typically, only 1 or 2 puffs of a marijuana

cigarette or vaporizer is sufficient to relieve RLS symptoms. It is not clear how long the relief lasts, as most patients use this at bedtime, but they do report the very rapid disappearance of their symptoms, which then helps them fall asleep.

36. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4537525/>

These findings suggest that tolerance to the somnolent effects of THC may have occurred, but results should be considered preliminary due to design limitations.

37. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5053383/>

A 57-year-old, married male patient reporting fibromyalgia for 5 years, and osteoarthritis, torn shoulder tendon, and spinal stenosis for over 20 years was referred to our clinic. His initial in-clinic recorded pain score was 8/10 on a numerical rating scale. The patient also had a history of severe obesity, sleep apnea, restless legs syndrome, and anxiety. Signs of neuropathic pain included widespread allodynia and positive DN4 score. At the time of meeting, the patient was taking several prescribed pain medications, including Percocet 5/325 mg as needed and Oxyneo 40 mg daily. Physiotherapy, corticosteroid injections, codeine, and a number of anti-inflammatory medications were unsuccessful at achieving adequate analgesia. The patient was inexperienced with cannabis, except for intermittent use on weekends.

The patient was prescribed 1.5 g per day of a strain of cannabis containing 5% THC and 8% CBD to be administered by a vaporizer. After 2 weeks of trial, the patient reported a lack of success, and a strain of 12% THC was added to the other strain, with instructions to mix the strains in equal parts. At 60 days of follow-up, the patient's pain was lowered to a weekly average of 3/10 on a numerical rating scale, and he lowered his use of Percocet from four pills per day to three pills per week, on average.

38. <https://www.ncbi.nlm.nih.gov/pubmed/15118485>

It would appear that the cannabinoids, THC and CBD, when given in the doses and in the combinations used in the present study, are unlikely to have adverse clinical effects on sleep. THC would appear to be a sedative compound, whereas CBD would appear to have some alerting properties. The distinct activity of these compounds suggests that they could be complementary in clinical practice. The alerting activity of CBD may be particularly useful in the concomitant administration of THC and CBD when the therapeutic activity of both compounds is sought.

39. <https://www.nap.edu/catalog/6376/marijuana-and-medicine-assessing-the-science-base>

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workshops noted that smoking marijuana reduces their muscle spasms, their nausea, and the frequency of their sleepless nights.

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<https://www.nap.edu/catalog/24625/the-health-effects-of-cannabis-and-cannabinoids-the-current-state>

There is moderate evidence that cannabis or cannabinoids are effective for:

- Improving short-term sleep outcomes in individuals with sleep disturbance associated with obstructive sleep apnea syndrome, fibromyalgia, chronic pain, and multiple sclerosis (cannabinoids, primarily nabiximols) (4-19)

**4. Provide articles published in peer-reviewed scientific journals reporting the results of research on the effects of marihuana on the medical condition or treatment of the medical condition and supporting why the medical condition should be added to the list of debilitating medical conditions under the Medical Marihuana Act. Attach a copy of all articles that are discussed in this section. Please do not attach articles that are not discussed in this section.**

See enclosed.



