Cannabis and Insomnia

Patients commonly report that use of cannabis reduces the time it takes them to fall asleep — whether or not insomnia was the complaint with which they presented.

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Abstract

Background: Safe and effective medications are needed for treatment of insomnia. In this large retrospective study of cannabis patients, we analyzed clinical data on patient-reported effects on sleep latency before and after the use of cannabis.

Methods: We conducted a focused, retrospective analysis of data collected from 166 subjects from two cannabis clinics in Southern California (Ventura and San Clemente). Subjects who reported difficulty with sleeping (n=116) and those who reported no difficulty with sleeping (n=31) were included in this analysis. The primary outcome measures were a comparison of both cohorts and the sleep latency time after the use of cannabis compared with sleep latency time without the use of cannabis. Secondary outcomes were measured by comparing sleep latency between the two cohorts, sleep quality, and effect on dreaming. Analysis was conducted by the Wilcoxon-signed rank test and the Kruskal-Wallis test.

Findings: The two cohorts (n=147) did not statistically differ in characteristics except for their ingestion of cannabis orally and in their total cannabis ingestion per week. We noted a significant decrease in reported time to sleep after the use of cannabis in both those with and those without reported sleep difficulties. In terms of the secondary outcome, we saw a statistically significant difference (p=0.001) in time it took to fall asleep between both groups.

Conclusions: Patients seeking physician approval to use cannabis commonly report benefits on sleeping (n=116) and those who reported no difficulty with sleeping (n=31) were included in this study. The intake data of 166 patients were assessed for their ingestion of cannabis orally and in their total cannabis ingestion per week. We noted a significant decrease in reported time to sleep after the use of cannabis in both those with and those without reported sleep difficulties. In terms of the secondary outcome, we saw a statistically significant difference (p=0.001) in time it took to fall asleep between both groups.

Keywords: cannabis, insomnia, cannabis based medicine, sleep, cannabis

INTRODUCTION

Fifty-eight percent of adult Americans have reported symptoms of insomnia a few nights a week or more.1

The staggering prevalence of insomnia and the well-known complications of poor sleep quality, such as its effect on productivity, mental health, and cardiac and endocrinologic function, suggest the need for effective treatment of this spectrum of disorders.

Historically, drugs such as morphine, alcohol, and barbiturates were used in various preparations. Cannabis was also used to treat insomnia prior to its prohibition in 1937. Currently, three classes of medications have FDA approval for treating sleep disorders: benzodiazepines, barbiturates, and the newest class of non-benzodiazepine hypnotic medications. All have significant adverse side effects, including dependence, serious withdrawal, and complex sleep-related behaviors.

Although its status on Schedule I has made research and procurement of cannabis difficult, several published studies suggest it is effective in the treatment of insomnia. One involved a small but statistically significant double-blind trial in a cohort of insomniacs; others focused on patients with multiple sclerosis and fibromyalgia.2,3,11

The endogenous cannabinoid anandamide, which acts on the same receptors as THC, has been shown to increase sleep through an adenosine pathway in the rat basal forebrain.4

In studies of brain-wave activity, cannabis has been shown to facilitate a relaxed state of alpha-dominated waves. A study supported by the National Institute on Drug Abuse showed increased EEG alpha activity in the early phase of administration of inhaled cannabis (standardized to 2.5% THC).5

Studies on humans and animals suggest that THC and CBD have sedative, anxiolytic properties.6,14 Side effects are common with the sedative hypnotic class, and some data suggest that cannabis and/or THC have side effects such as g riggyness, dry mouth and in some case may lead to a cannabis-withdrawal syndrome similar to most antidepressants.

METHODS

Study Design: One of us (Tringale) completed a focused retrospective analysis of data previously collected from a cohort of 166 patients in a cannabis-oriented practice run by the other (Jensen). This group of 166 was blindly selected from a group of charts organized by year of initial presentation, in order to provide a broad sample across three years of patient visits. The demographics of this group can be seen in Table 1, below:

Our focus was on two groups from this population: those with and those without documented difficulty sleeping, and those who reported significant sleep difficulties. Our primary objective was to measure any associations in the groups between age, sex, alcohol use, amount of cannabis used each week, or other factors found in a review of systems. Our secondary objective was to evaluate how cannabis use affects sleep latency — the time it takes to fall asleep — in both groups. Other objectives were to examine the effect of cannabis use on sleep initiation and duration.

The initial exclusion criteria were the absence of an answer to the question on Dr. Jensen's intake form concerning trouble sleeping. The final exclusion criteria were the absence of a full response to the two questions of time to sleep without cannabis use and with cannabis use. Study Population

Dr. Jensen's clinics were in San Clemente and Ventura, California. Patients had been self-referred and were seeking physician approval to use cannabis to treat a variety of medical conditions.

Data Collection

The data was obtained from January through December 2005 as part of the routine intake form filled out by patients. Each form was read by Dr. Jensen, who did the intake evaluation and elicited additional history. Two HIPAA-trained medical students from USC's Keck School of Medicine (Tringale and Ishimoto) subsequently transposed the data to an Excel worksheet. No patient identifiers were used, and once patients' answers were coded, charts were returned to storage and not opened again.

Statistical Analysis

To compare characteristics of those with and without insomnia we used a chi-squared analysis to detect any statistical difference. To measure sleep latency we evaluated responses in each group using a Wilcoxon-signed rank test. To compare the two groups, we ran a Kruskal-Wallis test because in examining the data set we found the non-insomnia group to be non-parametric in distribution.

RESULTS

The intake data of 166 patients were assessed for eligibility and 147 were included (See tables 1 and 2). The two cohorts were well matched except for their ingestion of cannabis orally (p=0.0494). Those patients who reported sleep difficulties appeared to ingest more cannabis.

As for the secondary-outcome measure of self-reported sleep latency time, 104 of 116 patients reporting difficulty with sleep, and 21 of 31 reporting no difficulty with sleep were included. We noted a significant decrease in reported time to sleep after the use of cannabis in both those groups, with (median -1.25 hours, p=0.000) and those without, continued on next page
Both groups of patients—16% and 28% reported increased sleep quality after using cannabis for those with frequent nightmares or disturbing dreams, for which both groups’ sleep improved with cannabis, the group reporting trouble sleeping experienced a much greater effect. In order to account for the observed difference in the baseline characteristic of oral use of cannabis, we excluded those patients and the difference persisted (p=0.001).

Among those who had reported trouble sleeping, 79% reported increased sleep quality after using cannabis. This saw less consistent responses with respect to dreaming, with 21% reporting a decrease in dreaming, 28% reporting no change, and 44% leaving the question blank. (Table 3)

Table 2
Cannabis Characteristics  Control  Trouble sleeping  P-value
Route of administration  n=81  n=116
oral  2  28  0.449
pipe  14  56  0.862
bongs  10  54  0.333
vaporizer  6  24  0.890
joint  12  57  0.862
other  1  8  0.533
no response  5  6  0.46

Table 3
Sleep Quality: n=116
Increase  79%  0.001
no response  16%  0.001
no change  5%  0.001

Table 3
reported change in sleep quality and dreaming

for sleep will shed light on which compounds in cannabis are sedating. It has been suggested that non-cannabinoids such as “certain sesquiterpene alcohols, including guaiol and isomers of eudesmol,” are enhancing the hypnotic effect of cannabis indica. Another factor may be concentration of THC, where lower levels induce sleep and higher levels cause increased dopaminergic activity. THC/CBD ratio may be equally significant.

We infer that any compound that actively modulates the endocannabinoid system in vivo may have a clinical effect on sleep. Future studies might seek to determine which components of cannabis are sedating.

References