



# A hidden effect of marijuana use

Findings on sleep give clinicians an opportunity to discuss marijuana's harms

**D**espite slight decreases in reported marijuana use among youths and adults over the past several years, marijuana is still the most commonly used illicit drug in the United States.<sup>1,2</sup> Because it is highly improbable, although not impossible, that marijuana use will result in salient, acute negative consequences (e.g., overdose, hallucinations, blackouts, hangovers), marijuana is often regarded as a “soft drug” with relatively minor risks in comparison to other illegal drugs. Many of the detrimental effects of marijuana use involve gradual changes in functioning that develop over substantial periods of time.

Marijuana is not unlike tobacco in the sense that it is more difficult for its users to recognize its effects, and therefore easier for them to rationalize use. Still, the paradox of marijuana use is that “soft drug” or not, the potential accumulated risks can be very severe, up to and including death. The same phenomenon exists in tobacco use; the consequences of use are not as acute as those of other drugs, yet tobacco use is still the leading cause of preventable death in the United States.<sup>3</sup>

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Clients in substance use treatment are often misinformed or relatively uneducated about marijuana use's effects. This article explores just one of the many areas of functioning that marijuana can affect in users: the human sleep cycle. Marijuana's impact on the sleep cycle can produce both acute and chronic effects on a person's functioning. This offers a partial physiological explanation for some of the reported effects of marijuana use.

A brief overview of the human sleep cycle and its importance in terms of daily functioning is in order. Humans sleep in five different stages, differentiated primarily by brain wave patterns measured by electroencephalography (EEG). Just prior to falling asleep, the typical person is in a relaxed state of consciousness characterized by alpha waves (a frequency of 8 to 12 waves per second). After the person falls asleep, phase one of the sleep cycle begins, during which brain activity is still fairly high but declining. When a person reaches stage two, brain waves

become slower. The third and fourth stages of sleep are known as slow-wave sleep. During SWS, heart rate, breathing rate, and brain activity slow down and the percentage of slow, large-amplitude waves increases. After stage four, a person cycles back through stages three and two. However, instead of returning to stage one, the person enters a stage of sleep known as rapid eye movement (REM) sleep.

REM sleep (also known as “paradoxical sleep”) is characterized by irregular, low-voltage fast brain waves. Despite this considerable degree of brain activity, the postural muscles of the body are more relaxed at this stage of sleep than at any other stage. Dreams are more vivid, intricate, and somewhat more frequent during this stage. Short-term memory is consolidated into long-term memory. Since muscles are most relaxed during REM sleep, the body shifts its resources to the task of repairing tissues and cells—a vital task of the immune system.<sup>4,5</sup>

Since the 1970s, several studies have examined the effect of THC (the main psychoactive ingredient in marijuana) on SWS and REM sleep stages. Researchers have demonstrated that THC ingestion decreases SWS and REM sleep, and has sometimes been found to eliminate REM sleep altogether in rats, rabbits, and cats.<sup>6,7,8,9</sup> In later research, the same effect was observed in humans in controlled studies, with the added finding that sleep cycles did not return to normal until after about one week of abstinence.<sup>10,11</sup> Difficulty falling and staying asleep and restlessness were noted in three studies a few days after abstinence for people who smoked marijuana and for people who orally ingested THC.<sup>12,13,14</sup>

### Clinical application

Clinicians can apply knowledge of marijuana's effects on sleep in several ways. In my practice I favor the change process model proposed by Prochaska, Norcross, and DiClemente.<sup>15</sup> The model is unique in that rather than starting with a hypothesis about how change happens and then testing it, these researchers first found clients who had successfully established and maintained major life changes, then studied similarities in the change experiences that formed the basis for the Stages of Change approach.

Clinicians can best facilitate the change process when they match clients with strategies and techniques that take into consideration where the client is in the change process. For example, education on substances' effects on the body is not necessarily the most effective focus for a client who already has dedicated herself to change and is now preparing for discharge from a residential program. Dispensing information on marijuana's effect on sleep can be particularly effective for clients in the first and second stages of change: precontemplation and contemplation.

When clients are in the precontemplation stage, not only have they not yet committed to making changes in terms of marijuana use, they typically do not even recognize their use as a problem. They have not begun to consider seriously the need for change. For clients who successfully move from precontemplation

to contemplation, information on their substance use is an important antecedent to progress. In this stage, information on marijuana's effects on the body and how those effects influence functioning is essential.

I'll provide an example from my own practice. I would describe my group counseling sessions as half psychoeducational (dispensing information on substances, addiction, recovery, relapse prevention, etc.) and half group process, often focused on group reaction to the information I provide. I always begin my groups with a "feeling round" that gives clients the opportunity to express how they are feeling at that moment. A client who had just started group said he felt tired because he was having some sleep problems. He eventually revealed that he had just stopped smoking marijuana after years of daily use in order to pass his drug tests for the group. He started experiencing very vivid, realistic dreams. Because he had not remembered experiencing dreams in years, he was somewhat disturbed by their sudden onset. After waking from a dream in the middle of the night, he found it difficult to fall asleep again. He considered the possibility that marijuana had actually been improving his sleep experience all these years.

This client's self-disclosure provided a convenient opportunity to dispense information on marijuana and sleep. I summarized what he shared and then said something like, "The idea that marijuana has been helping you sleep better all these years sounds very interesting. Does anyone here know anything about how marijuana affects people's sleep?"

Whenever I pose this question, some clients invariably report that the drug helps them get to sleep better. I acknowledge such reports and accept them as genuine experiences. I then ask follow-up questions such as, "Have any of you ever found that although you fall asleep easier after you've smoked, you often feel tired or maybe even kind of lazy the next day?" With some discussion, clients eventually acknowledge this daytime lethargy.

I then discuss the stages of sleep and

the importance of these stages from a practical standpoint (i.e., feeling aware and energetic the following day, remembering information more easily, getting sick less often, feeling "better"). I am always careful to include a description of dreams during SWS and REM and how they are part of the memory consolidation. Because many clients engage more easily when visuals are presented, I use a dry erase board to draw diagrams of the sleep cycle that show differences in brain wave patterns. In my experience, clients often seem interested and engaged during this discussion.



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I then summarize some of the research on how marijuana decreases SWS and REM sleep and gently suggest that my client's sudden experience of vivid, realistic dreams is a healthy sign that his body is returning to its natural, healthy sleep process. Typically, some clients in the group share information that is very consistent with my points (e.g., "Yeah, I also noticed that I didn't dream much when I was smoking"; "I do feel sharper and more energetic these days than when I was smoking...I just seem to think clearer now").

A second way that I introduce this information to my clients is through bibliotherapy. I sometimes work into treatment plans some reading materials on the effects of a client's drug of choice. I ask clients to present in group a summary of the materials they read so that others might benefit from their expertise. If a client who has used marijuana doesn't touch on this subject, I often directly ask, "Did you read anything about marijuana and sleep in that article?" If the client did not, then I open the question up to the group ("Has anyone read or heard anything about marijuana's effects on sleep?"). If no clients share, then I begin a discussion on marijuana and sleep.

### Lifestyle effects

Research has consistently demonstrated that THC has a negative impact on sleep quality both during use and during withdrawal, although many of the studies are outdated (1970s and 1980s) and more

recent research is needed. For clients with chronic marijuana use, years of use equate to a lack of normal, healthy, good-quality sleep for extended periods of time.

Many clinicians would argue that addiction counseling is not about quitting drug use—it's about a return to or development of a healthy, positive lifestyle that improves overall quality of life, sense of fulfillment, and adaptive functioning on a day-to-day basis. It's about living more fully, not just removing something from one's life. Quality of sleep correlates with increased life satisfaction and decreased depression, and this is important for clinicians to consider when working with their clients.<sup>16,17</sup>

The effects of marijuana on sleep are often not included in information provided to clients in substance use treatment settings. Adding information on this topic to one's repertoire of knowledge on pharmacology, and sharing it with clients in ways that are meaningful, relevant, and appropriate, may help enhance clients' motivation for change. This information, when combined with other information on marijuana's effects, can help clients make informed choices concerning their use.

It's a simple equation and it's not hard to get it out to clients: Marijuana decreases sleep quality, which in turn affects overall quality of life by contributing to memory impairment, unpleasant moods, immune system impairment, and a host of other significant deficits. ■

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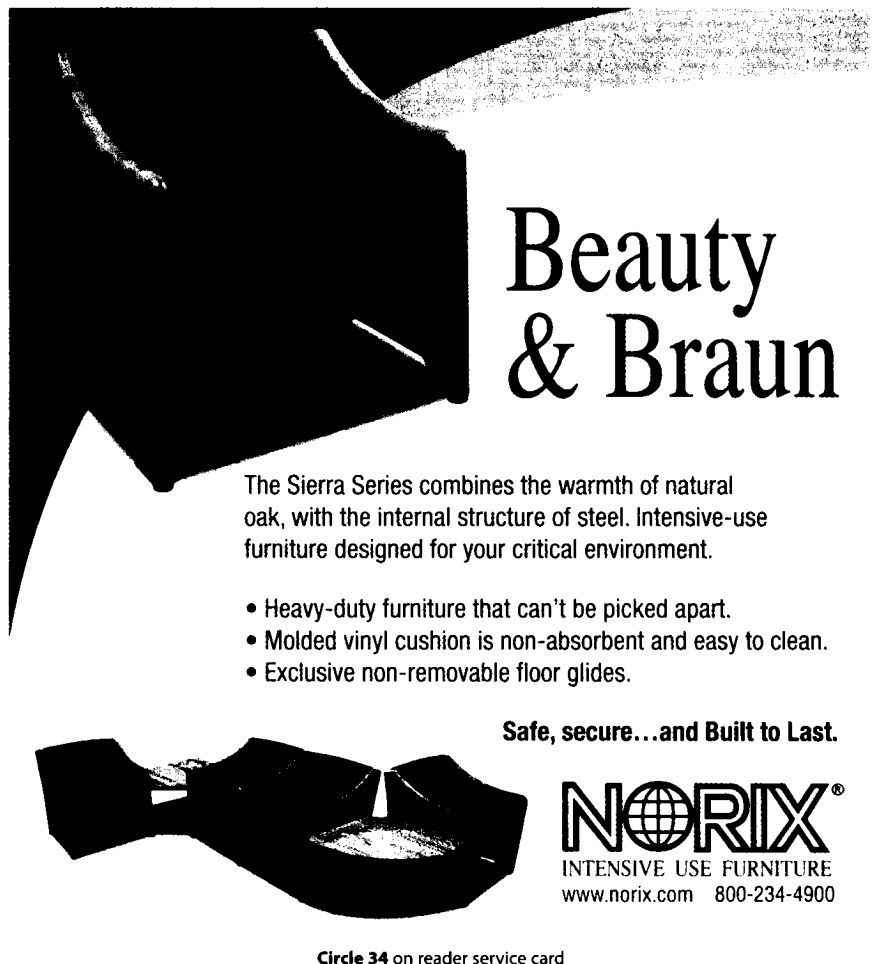
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