

## **Reviewing alcohol's effects on normal sleep**

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Sleep is supported by natural cycles of activity in the brain and consists of two basic states: rapid eye movement (REM) sleep and non-rapid eye movement (NREM) sleep. Typically, people begin the sleep cycle with NREM sleep followed by a very short period of REM sleep, then continue with more NREM sleep and more REM sleep, this 90 minute cycle continuing through the night. A review of all known scientific studies on the impact of drinking on nocturnal sleep has clarified that alcohol shortens the time it takes to fall asleep, increases deep sleep, and reduces REM sleep.

Results will be published in the April 2013 issue of *Alcoholism: Clinical* & *Experimental Research* and are currently available at Early View.

"This review has for the first time consolidated all the available literature on the immediate effects of <u>alcohol</u> on the sleep of healthy individuals," said Irshaad Ebrahim, medical director at The London Sleep Centre as well as corresponding author for the study.

"Certainly a mythology seems to have developed around the impact of <u>alcohol</u> on sleep," added Chris Idzikowski, director of the Edinburgh Sleep Centre. "It is a good time to review the research as the mythology seems to be flourishing more rapidly than the research itself. Also, our understanding of sleep has accelerated in the past 30 years, which has meant that some of the initial interpretations need to be revisited."

Some of the review's key themes are:



• At all dosages, alcohol causes a reduction in sleep onset latency, a more consolidated first half sleep, and an increase in sleep disruption in the second half of sleep.

"This review confirms that the immediate and short-term impact of alcohol is to reduce the time it takes to fall asleep," said Ebrahim. "In addition, the higher the dose, the greater the impact on increasing deep sleep. This effect on the first half of sleep may be partly the reason some people with insomnia use alcohol as a sleep aid. However, the effect of consolidating sleep in the first half of the night is offset by having more disrupted sleep in the second half of the night."

• The majority of studies, across alcohol dose, age, and gender, confirm an increase in slow-wave sleep (SWS) in the first half of the night. SWS, often referred to as deep sleep, consists of stages 3 and 4 of NREM. During SWS, the body repairs and regenerates tissues, builds bone and muscle, and appears to strengthen the immune system. Alcohol's impact on SWS in the first half of the night appears to be more robust than its effect on <u>REM sleep</u>.

"SWS or <u>deep sleep</u> generally promotes rest and restoration," said Ebrahim. "However, when alcohol increases SWS, this may also increase vulnerability to certain sleep problems such as sleepwalking or sleep apnoea in those who are predisposed."

• Alcohol's effects on REM sleep in the first half of sleep appear to be dose related. Low and moderate doses show no clear effects on REM sleep in the first half of the night, whereas at high doses, REM sleep reduction in the first part of sleep is significant. Total night REM sleep percent is decreased in the majority of studies at moderate and high doses.



"Dreams generally occur in the REM stage of sleep," said Ebrahim. "During REM sleep the <u>brain</u> is more active, and may be regarded as 'defragmenting the drive.' REM sleep is also important because it can influence memory and serve restorative functions. Conversely, lack of REM sleep can have a detrimental effect on concentration, motor skills, and memory. REM sleep typically accounts for 20 to 25 percent of the sleep period."

• The onset of the first REM sleep period is significantly delayed at all doses and appears to be the most recognizable effect of alcohol on REM sleep, followed by a reduction in total night REM sleep.

"One consequence of a delayed onset of the first REM sleep would be less restful sleep," said Idzikowski. "The first REM episode is often delayed in stressful environments. There is also a linkage with depression."

Ebrahim agreed. "One hypothesis is that alcohol acts like medications that are used for depression and anxiety," he added. "Studies on patients with depression have identified that untreated patients had excessive REM sleep, particularly in the early part of the night, and that antidepressant medication suppressed REM sleep. Alcohol acts like antidepressants, reducing REM sleep particularly in the first part of the night. This impact of alcohol on REM sleep may explain the mood elevation and anxiety reduction associated with alcohol use."

"This review really helps to clarify findings to date as they apply to normal individuals," said Idzikowski. "The high attrition rate from 153 to 20 published studies that were examined enables us to know the real state of play regarding the impact of alcohol on normal volunteers. Whilst some of the studies were rejected on methodological grounds, many were rejected because they were on physically or mentally



disordered individuals."

Both Ebrahim and Idzikowski hope this review will help readers understand that short-term alcohol use only gives the impression of improving sleep, and it should not be used as a sleep aid.

"In sum," said Idzikowski, "alcohol on the whole is not useful for improving a whole night's sleep. Sleep may be deeper to start with, but then becomes disrupted. Additionally, that deeper sleep will probably promote snoring and poorer breathing. So, one shouldn't expect better <u>sleep</u> with alcohol."

Provided by Alcoholism: Clinical & Experimental Research

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