U.S. Department of Health and Human Services
NIH News
National Institutes of Health

National Institute of Nursing Research
www.nih.gov/ninr

EMBARGOED FOR RELEASE
March 12, 2003 at 6:00 PM EST

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SUSTAINED REDUCED SLEEP CAN HAVE SERIOUS CONSEQUENCES

In a study on the effects of sleep deprivation, investigators at the University of Pennsylvania found that subjects who slept four to six hours a night for fourteen consecutive nights showed significant deficits in cognitive performance equivalent to going without sleep for up to three days in a row. Yet these subjects reported feeling only slightly sleepy and were unaware of how impaired they were. The research article, "The Cumulative Cost of Additional Wakefulness: Dose-Response Effects on Neurobehavioral Functions and Sleep Physiology From Chronic Sleep Restriction and Total Sleep Deprivation," appears in the March issue of the journal *SLEEP*.

According to Principal Investigator David Dinges, "This is the first systematic study to look at the prolonged cognitive effects of chronic sleep restriction lasting for more than a week. The results provide a clearer picture of possible dangers to people who typically are awake longer on a regular basis," he explained, "including members of the military, medical and surgical residents, and shift workers. Reduced cognitive abilities can occur even with a moderate reduction in sleep."

Cognitive performance deficits included reduced ability to pay attention and react to a stimulus, such as when driving, or monitoring at airports. Other deficits involved impairment of the ability to think quickly and not make mistakes, and a reduced ability to multi-task -- to hold thoughts in the brain in some order while doing something else.

Dr. Patricia A. Grady, Director of the National Institute of Nursing Research, NIH, which provided primary funding for the study, said, "These findings show that while young adults may believe they can adapt to less than a full night's sleep over time, chronic sleep deprivation may seriously affect their performance while they are awake, and they may not even realize it."

Investigators also found that to prevent neurobehavioral defects from accumulating, the average person needs 8.16 hours of sleep during a 24-hour day, although there were differences among individuals in their need for sleep.

The study included 48 healthy individuals aged 21 to 38 who were divided into four groups – those who were allowed to sleep up to either 8, 6 or 4 hours per night during a 24-hour period for two weeks, and those who were deprived of sleep for three consecutive 24-hour periods. The experiments were conducted in a lab with constant monitoring. When awake, participants could watch movies, read, and interact with lab staff but could not have caffeine, alcohol, tobacco or medications.

In addition to NINR, other NIH funding was provided by the National Center for Research Resources and National Heart, Lung and Blood Institute. NIH is part of the Department of Health and Human Services. A grant from the Air Force Office of Scientific Research supported total sleep deprivation data used in the study.

To view and download a copy of the study please visit: http://www.journalsleep.org/citation/sleepdata.asp?citationid=2198. Enter the username: press03 and password: 262003 to view the full PDF. This link will be available after 6:00 PM on 3/12/03.

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