

Deep brain stimulation can reverse memory loss due to sleep deprivation

From ANI

Washington, Feb 2: Researchers at the Columbia University Medical Centre have found that stimulating a particular section in the brain can help ward off deficits in the working memory that occur due to lack of sleep.

The study led by Dr Yaakov Stern, Ph.D., a professor of clinical neuropsychology in neurology and psychiatry at the Taub Institute for the Research on Alzheimer's Disease and the Aging Brain, used repetitive transcranial magnetic stimulation (rTMS) to non-invasively manipulate a brain network identified by imaging to partially remediate the effects of sleep deprivation.

The study involved 15 young, healthy subjects who were deprived of sleep for 48 hours. Working memory was tested using a letter recognition test, known as the delayed match to sample (DMS) task, in which subjects have to recall as quickly as possible whether a letter was included in a set of letters they had just seen.

The findings revealed that stimulation of a region over left lateral occipital cortex, a prominent part of the brain network identified with fMRI, resulted in a reduction of sleep-induced slower reaction time without a corresponding decrease in accuracy.

"We are excited about the possibilities of using brain stimulation to improve cognitive function," said Bruce Luber, Ph.D., lead author of the paper and an instructor in clinical psychiatry at Columbia University College of Physicians and Surgeons and the New York State Psychiatric Institute.

"We recently published a study in which we were able to improve the working memory performance of young adults for the first time and this new study extends our findings," he added.

Dr Stern believes that these findings would help in understanding cognitive decline in the elderly.

"These findings have important implications for better understanding the neural bases of cognitive decline in the elderly. And the rTMS used in this study may potentially be useful in exploring and treating cognitive deficits due to aging and neuropathology in general," said Dr Stern.

The findings were published online on Jan. 17, 2008 in Cerebral Cortex.

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