

Medical News

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Omicron Better at Invading Young Noses than Other Variants; Smell Loss May Predict Memory Issues

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Children's Noses Defend Less Well Against Omicron

The Omicron variant may be more efficient at infecting children through the nose than previous versions of the coronavirus, a small study suggests. Earlier in the pandemic, children's noses had been less welcoming to the virus that causes COVID-19 than adults' noses. Studies of the original SARS-CoV-2 and some of its variants found the virus was met with stronger immune responses in the cells lining young noses than in adults' nasal-lining cells, and it was less efficient at making copies of itself in children's noses. But recent test-tube experiments mixing the virus with nasal cells from 23 healthy children and 15 healthy adults found the antiviral defenses in kids' noses "was markedly less pronounced in the case of Omicron," researchers reported on Monday in *PLOS Biology*. They also report that Omicron reproduced itself more efficiently in children's nasal-lining cells compared to both Delta and the original virus.

"These data are consistent with the increased number of pediatric infections observed during the Omicron wave," the researchers wrote, while calling for additional studies.

Smell Problems May Predict Memory Problems After COVID-19 :

Severity of smell dysfunction after infection with the coronavirus may be a better predictor of long-term cognitive impairment than overall severity of COVID-19, according to an Argentinian study. Researchers studied a random sample of 766 people over age 60, roughly 90% of whom had been infected with the virus. Physical, cognitive, and neuropsychiatric tests performed 3-to-6 months after infection showed some degree of memory impairment in two-thirds of the infected participants. After taking individuals' other risk factors into account, severity of loss of smell, known as anosmia, "but not clinical status, significantly (predicted) cognitive impairment," the researchers reported on Sunday at the Alzheimer's Association International Conference 2022, held online and in San Diego.

"The more insight we have into what causes or at least predicts who will experience the significant long-term cognitive impact of COVID-19 infection, the better we can track it and begin to develop methods to prevent it," study leader Gabriela Gonzalez-Aleman of Pontificia Universidad Catolica Argentina in Buenos Aires said in a statement.

Waking Up at Night Could Be Your Brain Boosting Your Memory

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We tend to think a good night's sleep should be uninterrupted, but surprising new research from the University of Copenhagen suggests just the opposite: Brief awakenings may be a sign you've slept well.

The study, done on mice, found that the stress transmitter noradrenaline wakes up the brain many times a night. These "microarousals" were linked to memory consolidation, meaning they help you remember the previous day's events. In fact, the more "awake" you are during a microarousal, the better the memory boost, the research suggests.

"Every time I wake up in the middle of the night now, I think — ah, nice, I probably just had great memory-boosting sleep," says study author Celia Kjaerby, PhD, an assistant professor at the university's Center for Translational Neuromedicine.

The findings add insight to what happens in the brain during sleep and may help pave the way for new treatments for those who have sleep disorders.

Previous research has suggested that noradrenaline — a hormone that increases during stress but also helps you stay focused — is inactive during sleep. So, the researchers were surprised to see high levels of it in the brains of the sleeping rodents.

"I still remember seeing the first traces showing the brain activity of the norepinephrine stress system during sleep. We could not believe our eyes," Kjaerby says. "Everyone had thought the system would be quiet. And now we have found out that it completely controls the microarchitecture of sleep."

Those noradrenaline levels rise and fall like waves every 30 seconds during non-rapid eye movement (NREM) sleep. At each "peak" the brain is briefly awake, and at each "valley" it is asleep. Typically, these awakenings are so brief that the sleeping subject does not

notice. But the higher the rise, the longer the awakening — and the more likely the sleeper may notice.

During the valleys, or when norepinephrine drops, so-called sleep spindles occur.

"These are short oscillatory bursts of brain activity linked to memory consolidation," Kjaerby says. Occasionally there is a "deep valley," lasting 3 to 5 minutes, leading to more sleep spindles. The mice with the most deep valleys also had the best memories, the researchers noted.

"We have shown that the amount of these super-boosts of sleep spindles, and not REM sleep, defines how well you remember the experiences you had prior to going to sleep," says Kjaerby.

Deep valleys were followed by longer awakenings, the researchers observed. So, the longer the valley, the longer the awakening — and the better the memory boost. This means that, though restless sleep is not good, waking up briefly may be a natural part of memory-related sleep phases and may even mean you've slept well.

The findings fit with previous clinical data that shows we wake up roughly 100-plus times a night, mostly during NREM sleep stage 2 (the spindle-rich sleep stage), Kjaerby says. Still, more research on these small awakenings is needed, Kjaerby says. She notes that professor Maiken Nedergaard, MD, another author of this study, has found that the brain cleans up waste products through a rinsing fluid system.

"It remains a puzzle why the fluid system is so active when we sleep," Kjaerby says. "We believe these short awakenings could potentially be the key to answering this question."

Low Calcium, Potassium Key Risk Factors for Kidney Stones

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Low dietary calcium and potassium intake are important risk factors for the development of incident kidney stones as well as their symptomatic recurrence, a population-based study of dietary factors shows.

"Our research is of particular importance as recommendations for preventing symptomatic recurrence of kidney stones has largely been based on dietary factors associated with the incidence rather than the recurrence of stone formation," Api Chewcharat, MD, Mayo Clinic, Rochester, Minnesota, said in a video discussing the study.

"We recommend a daily intake of calcium of approximately 1200 mg and a diet that is high in potassium, especially high in fruits and vegetables, in order to pre-

vent both incident and recurrent symptomatic kidney stone formation," he stressed.

The study was published online August 1, 2022 in the Mayo Clinic Proceedings.

Lower Dietary Calcium, Potassium, and Fluid Associated With Increased Incidence

Some 411 patients with incident symptomatic kidney stone formation were recruited. Diets were compared between them and 384 controls. Patients were seen at the Mayo Clinic in either Minnesota or Florida between January 1, 2009 and August 31, 2018. "Dietary factors were based on a Viocare, Inc, food frequency questionnaire administered during a baseline in-person study visit," Chewcharat and colleagues observed.

During a median follow-up of 4.1 years, 73 patients experienced a symptomatic recurrence. In a fully adjusted analysis, a dietary calcium intake <1200 mg/d was associated with incident stone formation. Similarly, among participants with a fluid intake < 3400 mL/d — about nine 12-oz glasses of fluid — was also associated with incident stone formation, as was a lower intake of dietary potassium, caffeine, and phytate. Phytate is an antioxidant found in whole grains, nuts, and other foods that can increase calcium absorption and urinary calcium excretion.

After excluding patients who were taking either a thiazide diuretic or a calcium supplement, lower dietary calcium and potassium, fluid, and phytate intake remained significantly associated with incident stone formation.

However, only lower dietary calcium intake was associated with a higher risk for symptomatic recurrence, although a lower dietary potassium intake was also associated with a higher risk for symptomatic recurrence in an analysis that adjusted for body mass index, fluid, and energy intake.

As the authors suggest, patients may be less keen to adjust their diet to prevent the development of incident kidney stones. On the other hand, they may be much more willing to adjust their diet to prevent their symptomatic recurrence. The US Department of Agriculture currently recommends that individuals get approximately 1200 mg/d of dietary calcium which, given the study results, appears to be justified for the prevention of symptomatic stone recurrence.

A higher calcium diet is associated with a higher urinary pH, and citrate confers an alkali load which helps protect against the formation of calcium oxalate stones. Foods that are high in potassium also contain more fluid, citrate, and phytate, which, again, have been reported to be protective against kidney stones. "Changing your diet to prevent kidney stones can be very difficult," Andrew Rule, MD, a nephrologist at the Mayo Clinic said in a

statement.

"Thus, knowing the dietary factors that are most important for preventing kidney stone recurrence can help patients and providers know what to prioritize," he added.

B6 a New Approach for Depression, Anxiety?

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High-dose vitamin B6 supplements may reduce feelings of anxiety and depression, new research suggests.

Investigators compared supplementation with a 1-month course of vitamin B6 or B12 to supplementation with placebo in almost 500 adults. Results showed that vitamin B6 supplementation was associated with reductions in self-reported anxiety and a trend toward decreased depressive symptoms.

In addition, the vitamin B6 group showed increased levels of gamma-aminobutyric acid (GABA), as indicated by results on a visual test that was administered at the end of the trial. The test results demonstrated subtle changes in participants' visual performance. The researchers considered this to be consistent with controlled levels of GABA-related brain activity.

However, "before practicing clinicians would recommend taking high doses of vitamin B6, a full-scale clinical trial would have to be carried out to verify the findings, assess any side effects, and find out which types of patients do or don't benefit," study investigator David Field, PhD, associate professor, School of Psychological and Clinical Language Sciences, University of Reading, United Kingdom, told Medscape Medical News.

"My relatively small study can only be considered as an initial proof of concept," Field said.

Vitamin B6 is a coenzyme in the synthesis of GABA, an inhibitory neurotransmitter, from glutamate. Some previous research has suggested that vitamins B6 and B12 have a role in improving mood-related outcomes.

PSIM News Corner

World Hepatitis Day July 28th, 2022: world hepatitis day was celebrated this year by Pakistan society of internal medicine in collaboration of Government of Punjab Hepatitis control program and University of Health Sciences on 28th of July 2022 at Shams Auditorium University of Health Sciences with a theme of I CAN'T WAIT.

A number of high officials graced the occasion. Key note speakers and Health experts expressed concerns over the high prevalence of hepatitis in the country and stressed upon the need to decentralize essential hepatitis services, deliver it in an integrated manner, bring hepa-

titis care closer to those who need it. Prof. Dr. Aftab mohsin, principal Rasid latif medical college stressed upon the importance of hepatitis B vaccination drive. Prof dr. Ghias un Nabi Tayyab stressed upon the importance of far bringing hepatitis care closer to communities for eradication of it in 2030 as set by WHO. Professor Javaid Akram suggested a theme of "REACH OUT" for better control and management of hepatitis B and C. he also highlighted the incidence of Hepatitis A and E n n its fatality in pregnant ladies. DG health Dr. Haroon jahangir, director hepatitis control program Dr. Shahid Magsi, head of office WHO Punjab Dr. Jamshaid ahmed, chairman steering committee for hepatitis Dr. Nusrat ullah chaudhary, Vice chancellor UHS prof. Dr. ahsan waheed rathore, president pakistan society of family physician Dr. Tariq mian also expressed their concern over hepatitis and its rising ratio in our part of the world.

A free screening camp was also arranged with courtesy of Ferozsons pharmaceuticals for hepatitis B and C along with a free vaccination desk for Hepatitis B by Government of Punjab Hepatitis control program.

An online poster competition was also conducted for MBBS undergraduates which were displayed in the audio-visual area and winners were announced in the activity.

The symposium ended with souvenir distribution for guests of honors and speakers along with organizing committee.

1ST Reach Out Program For Education (ROPE)

Activity: Reach out program of education, is a dedicated initiative of Pakistan Society of Internal Medicine in collaboration of Hilton pharmaceuticals to update the knowledge of physicians all across the country. 1st activity of ROPE was held on 19th June in Peshawar where more than 100 consultant physicians from different districts of KPK joined. Second activity of ROPE held at Karachi on 31st July 2022 which was attended by knowledgeable physicians from Karachi and the nearby areas. 3rd activity of this program will held at Lahore in mid August.

"Learning is a never ending process" and its true depiction is from platform of PSIM in the form of such dedicate programs to freshen the knowledge of not only graduates, under graduates but consultants also. Here is a glimpse of these events:



