How living at high altitude affects patients with COPD

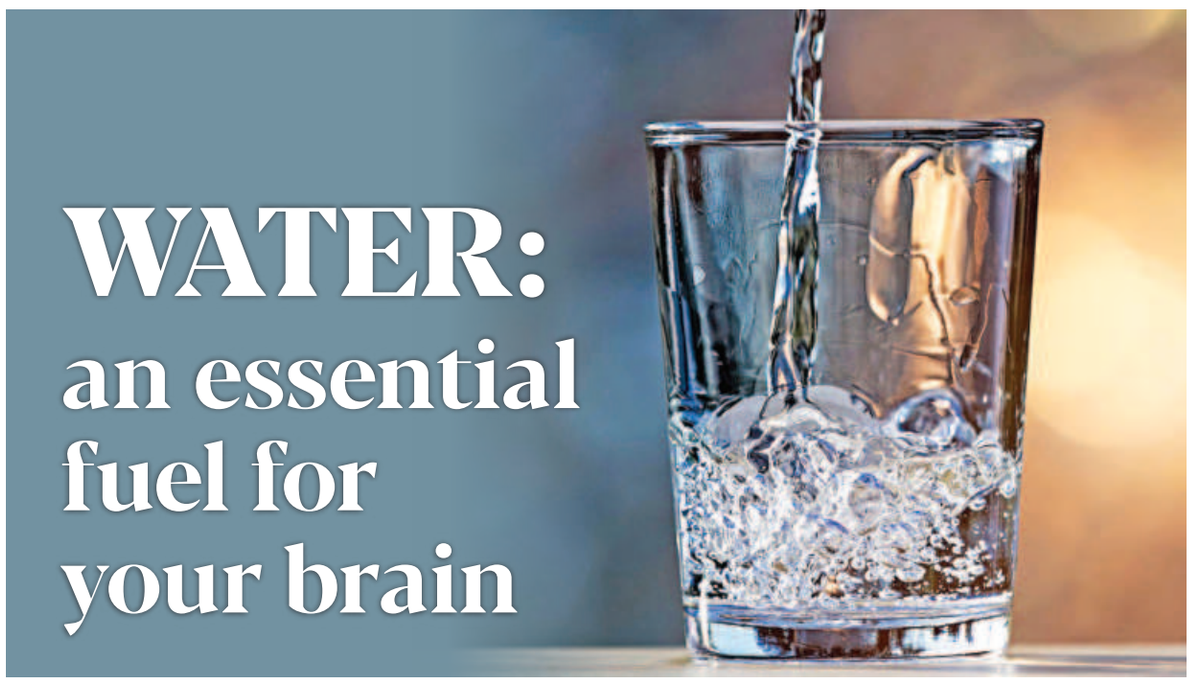
Chronic obstructive pulmonary disease (COPD) is challenging to manage, and high-altitude living adds another layer of complexity. At high altitudes, the reduced oxygen levels trigger physiological changes, but their impact on COPD patients remains uncertain.

Researchers analysed data from a multicenter cohort study, comparing about 1,400 COPD patients living below 1,000 feet with approximately 300 residing above 4,000 feet, mainly in cities like Denver and Salt Lake City. Most participants had lived at their respective altitudes for over a decade, according to the research sutdy published in the American Journal of Respiratory and Critical Care Medicine.

The findings revealed that COPD patients at higher altitudes walked an average of 100 feet less in a six-minute test and were significantly more likely to use supplemental oxygen. Despite these challenges, both groups reported similar symptom burdens, and lung function—measured by the rate of decline in forced expiratory volume in one second—was comparable during the three-year follow-up.

Interestingly, high-altitude residents had a 25% higher risk of death over an 11-year period. However, this association disappeared after adjusting for air pollution, suggesting air quality may play a more critical role than altitude itself in influencing outcomes for COPD patients.

For COPD patients considering a move to lower altitudes, these results provide a nuanced perspective. While high altitude may necessitate more oxygen support and reduce exercise capacity, it does not appear to worsen symptoms or long-term lung function. Addressing air pollution may be equally, if not more, important for improving outcomes.



WATER: an essential fuel for your brain

DR AMIT SARKER

What can you do to improve your overall brain health? The simple solution is to drink plenty of water. The human body comprises 45 to 75 percent water, and that water is particularly vital for the brain, as it accounts for 73 to 75 percent of brain mass. Unlike other parts of the body, the brain is unable to store water. Therefore, it is highly important to ensure you are drinking adequate water throughout the day to keep your brain hydrated.

The U.S. National Academies of Sciences, Engineering, and Medicine recommend that an adequate daily water consumption for males is 3.7 L and for females is 2.7 L. Keep in mind that a number of factors, such as temperature, humidity, medications, physical activities, and other health conditions, may influence your daily water needs. The more fluid you lose, the more you need to take it.

The function of your brain is strongly influenced by your level of hydration. There can be serious consequences when you neglect to give your brain the water it needs. There are a variety of studies that report the link between dehydration and mood disturbance. Several studies have reported that mild dehydration (loss of 1–3% of body weight) following exercises or high heat can negatively impact the mood and concentration.

Mild fluid loss can be one of the major reasons to impair brain performance, such as losing working memory, feeling less alert, feeling irritable or tense, and increasing the feelings of anxiety and fatigue.

However, prolonged dehydration can have more severe effects, such as hallucinations and unconsciousness. Consumption of adequate water is needed to manufacture happy hormones (dopamine and serotonin that regulate our positive mood). Researchers have found that consumption of sufficient volume of water can elevate your positive mood, even improve the short-term memory.

Dehydration also can enhance the frequency of headaches. In some individuals, dehydration can trigger headaches and migraines. It has been reported that headache is one of the most common symptoms of dehydration, and drinking plenty of water can relieve or significantly reduce headaches of those individuals who experience frequent headaches.

On the other hand, some people have experienced dehydration migraine headaches, which means the severity of migraine symptoms is triggered by dehydration. It has been found that the severity of migraine pain is significantly lower in those people who drink an adequate volume of water each day.

Overall, drinking plenty of fresh water is, of course, one of the simplest ways to stay hydrated. Drinking adequate water can improve one's brain health by simply increasing blood flow, minerals, and oxygen to the brain, which, in turn, enhances cognition and helps balance moods and emotions, reducing stress and headaches.

To ensure you remain hydrated throughout the day, keep a reusable water bottle with you. If you dislike drinking water, you can use combinations of fruits and herb infusions (e.g., lime and mint leaves) to add flavours. This can provide extra benefits such as antioxidants, which help to prevent oxidative stress in the brain.

You can use apps that remind you to drink water regularly throughout the day if you are the type of person who forgets to drink fluids.

Additionally, eating fruits with a high-water content, such as tomatoes, watermelon, or cucumber (which contains over 90% water), can also help you to stay more hydrated. So, drink plenty of fresh and purified water and stay healthy.

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NEW PERSPECTIVE ON OBESITY

Global commission proposes updated diagnostic framework

A landmark report published in The Lancet Diabetes & Endocrinology introduces a redefined approach to diagnosing obesity, aiming to address the limitations of traditional methods and ensure appropriate care for over one billion individuals living with obesity worldwide. Endorsed by more than 75 medical organisations, this global initiative emphasises a nuanced framework for identifying and managing obesity as a chronic condition when warranted.

The Commission highlights the shortcomings of relying solely on body mass index (BMI), which, while useful as a screening tool, does not directly measure fat distribution or account for individual health variations. To enhance diagnostic accuracy, the report proposes using additional measures such as waist-to-hip ratios, body fat scans, or functional health assessments alongside BMI.

A critical advancement in the framework is the classification of obesity into two categories: clinical obesity, marked by signs of reduced organ function or impaired daily activities caused by excess fat, and preclinical obesity, where individuals have increased health risks but no current illness. This approach facilitates personalised care, guiding timely treatment for those with clinical obesity and risk-reduction strategies for others.

The Commission underscores the need to combat weight stigma and advocates for better training for healthcare workers to ensure compassionate, evidence-based care. By prioritising individualised assessments, this initiative aspires to reshape global healthcare practices, offering hope for millions while conserving resources by reducing overdiagnosis and unnecessary interventions.

Does drinking tea cause kidney stones? An informative analysis

RAISA MEHZABEEN

Tea is cherished globally for its comforting qualities and potential health benefits. However, questions about its connection to kidney stone formation persist. Is tea a risk factor for kidney stones, or is this a misunderstanding? Let us explore the facts.

Understanding kidney stones

Kidney stones are solid deposits of minerals and salts that form when urine becomes overly concentrated. These stones can vary in composition:

1. Calcium oxalate stones: The most common type, formed when calcium binds with oxalate.

2. Uric acid stones: Often linked to high-protein diets.

3. Struvite stones: Associated with urinary tract infections.

4. Cystine stones: A rare type resulting from genetic conditions.

Symptoms often include severe pain in the back or sides, blood in the urine, and frequent urination.

Tea and oxalates: a connection?

Tea, particularly black tea, contains oxalates—compounds naturally present in many plants. When consumed excessively, these oxalates can bind with calcium in the urine, potentially forming calcium oxalate stones.

Oxalate levels in different teas

Black tea: High in oxalates; excessive consumption poses a greater risk.

Green tea: Contains significantly lower oxalate levels, making it a safer option.

Herbal teas: Often oxalate-free, but individual ingredients should be verified.

What does the research say?

Scientific studies reveal mixed findings about tea and kidney stones:

Risk with black tea: Research in the Clinical Journal of the American Society of Nephrology suggests that excessive black tea intake could increase oxalate levels, raising the risk of stones.

Green tea benefits: Its lower oxalate content and antioxidant properties may reduce stone risk.

Iced tea caution: Iced tea, due to its concentrated nature, contains higher oxalate levels, potentially heightening the risk for stone formation.

Practical tips for tea lovers

Tea enthusiasts can enjoy their favourite beverage while minimising risks by adopting these practices:

1. Moderate consumption: Limit black tea intake to 1-2 cups daily.

2. Hydration: Drink ample water to dilute oxalates and reduce the likelihood of stone formation.

3. Choose green or herbal teas: These alternatives are generally safer and still provide health benefits.

4. Pair tea with calcium-rich foods: Calcium in foods like milk or yoghurt binds with oxalates in the gut, reducing absorption.

5. Skip the sugar: Over-sweetened teas may increase the risk of uric acid stones.

For most people, moderate tea consumption is unlikely to cause kidney stones. However, those prone to stone formation or with certain health conditions should exercise caution. Opting for green tea or herbal blends offers a flavourful way to enjoy tea without the associated risks. Tea is a delightful and largely safe beverage—just enjoy it wisely!

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The promise and pitfalls of AI in clinical reasoning

Large language models (LLMs) like GPT-4 and Gemini-1.0-Pro are revolutionising clinical reasoning, demonstrating expert-level diagnostic capabilities. However, these tools are not without flaws, mirroring the cognitive biases that challenge human decision-making. Recent studies highlight both their potential and limitations in clinical practice.

One study examined the impact of GPT-4 on clinicians' diagnostic accuracy by presenting complex vignettes to 50 physicians randomised to use either standard tools or standard tools plus GPT-4 (JAMA Netw Open 2024; 7:e2440969). GPT-4 outperformed human groups when used independently but did not enhance clinicians' performance when combined with standard tools. This underscores the need for training to maximise AI's effectiveness in real-world contexts, which involve complexities beyond written cases.

Another study evaluated whether LLMs exhibit cognitive biases, testing GPT-4 and Gemini-1.0-Pro with clinical scenarios designed to expose flaws (NEJM AI 2024; 1:AIcs2400639). Results revealed biases such as the "framing effect," where treatment recommendations varied based on how survival or mortality was presented. Similarly, the "primacy effect" influenced AI's diagnostic prioritisation, while "hindsight bias" affected judgements on past care.

Interestingly, AI's biases were sometimes greater than those observed in human clinicians. Experts recommend clinicians use critical questioning strategies to challenge AI-generated conclusions, such as asking for alternative hypotheses or evidence against a diagnosis.

As LLMs become integral to healthcare, rigorous evaluation and thoughtful integration are essential to mitigate risks and harness their potential for improved patient outcomes.

E-cigarettes: The hidden dangers behind the vape craze

ABEDA SULTANA & DR ABU JAMIL FAISEL

An electronic cigarette (e-cigarette) is a device that ejects vaporised solution for inhalation. It usually contains nicotine, the addictive substance in regular cigarettes, along with other flavouring agents and chemicals, including heavy metals like nickel, tin, and lead. While e-cigarettes could potentially help adults quit smoking, they are not safe for youth, pregnant women, or non-smokers. Despite being marketed as a safer alternative, e-cigarettes have been misrepresented, leading to increased usage among young adults.

Waste management has become a critical global issue. The increasing use of e-cigarettes has introduced a new form of waste, consisting of e-liquid containers, cartridges with nicotine, and devices containing lithium-ion batteries. A 2017 study in Bangladesh reported a 0.2% prevalence of e-cigarette use, while a 2020 survey indicated that 31.27% of university students had tried e-cigarettes.

The popularity of vaping is growing in Bangladesh - according to Mr Schumann Zaman, president of the Bangladesh Electronic Nicotine Delivery System Traders Association (BENDSTA). He cited a study by Public Health England (PHE) claiming that vaping was 95% safer than smoking traditional cigarettes. However, this claim remains controversial.

E-cigarettes generally have three main components: a lithium-ion battery, a heating element, and a nicotine liquid cartridge, often flavoured. They come in reusable and disposable forms, with approximately 53% of vapes sold being disposable.

Disposable vapes, which are single-use, contribute significantly to waste as they are discarded once depleted. Concentrated nicotine is harmful if ingested or absorbed through the skin, and these devices often end up in landfills, where their components can release toxic substances such as heavy metals into the environment.

Lithium-ion batteries can overheat and combust, adding further risk. Disposing of e-liquid in regular trash is hazardous to both humans and animals and can damage the environment.

Landfills, especially older ones, may not contain these toxins properly, leading to contamination of soil and water. Leachate, formed when rainwater filters through e-waste, can pollute underground water sources, harming both health and agriculture. Lithium-ion batteries, commonly found in rechargeable e-cigarettes, also pose significant disposal challenges due to their potential to catch fire and explode.

The disposal of e-cigarette waste is further complicated by the fact that newer models often come with built-in batteries, making proper recycling difficult. Incineration is the most common disposal method, but it releases harmful emissions and further harms the environment.

In the UK, research by Material Focus found that a third of the almost half a billion vapes purchased annually end up in landfills, contributing to significant environmental damage. Disposable vapes, in particular, are a major problem, with millions discarded each week.

In Bangladesh, e-waste recycling often occurs informally, exposing workers to harmful substances. Toxicants from e-waste contaminate the land, and the health risks related to this informal recycling process are a growing concern.

To manage e-cigarette waste effectively, Bangladesh must implement regulations to control the production, sale, and disposal of e-cigarettes. The government should amend tobacco control laws to prohibit e-cigarettes, ensuring the protection of public health and the environment. This measure is necessary to safeguard future generations from the harmful effects of e-cigarettes and vaping.

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Rising concern over HMPV amid seasonal surge

DR ZUBAIR KHALED HUQ

Human Metapneumovirus (HMPV) is an RNA virus. Belongs to the paramyxoviridae family, similar to RSV. It occurs in late winter and spring. Reinfection can occur throughout life. First detected in 2001, it has been there for more than 60 years. It is a respiratory virus. It affects children less than 5 years of age, older people, and those who are immunocompromised, asthmatics, and those on immunosuppressive drugs.

Main symptoms are respiratory complications, fever, common cold, mucus hyperproduction, and epithelial hyperresponsiveness. Clinical manifestations are rhinitis, cough, fever, and wheezing. The incubation period is 5 to 7 days; virus shedding occurs then. It is usually self-limiting; hospitalisation is low. It spreads by droplets, aerosol, and close contact. One should maintain at least a distance of 6 feet to avoid contamination.

Diagnosis is done by RT-PCR and multiplex PCR from nasopharyngeal swabs or aspirates. Treatment is supportive, as with other viruses. There is no specific vaccine. Management is supportive, like hydration and antipyretics for fever. Oxygen therapy for hypoxia, mechanical ventilation in severe cases. Inhaled bronchodilators or corticosteroids may be considered for wheezing, though their effectiveness is inconsistent.

Good hand hygiene is essential. Avoiding close contact with infected individuals and disinfecting surfaces frequently are the main modalities of safeguarding. Isolation of symptomatic patients in a healthcare setting is needed.

It is not a new virus to come out of China. Surging HMPV cases in Northern China have prompted some online alarm, but experts believe the risk of another COVID-like pandemic is low. Health authorities across the country should remain vigilant about respiratory illnesses, particularly in light of the recent surge in HMPV cases in China. Infected children should not be sent to school during illness. Those with respiratory symptoms should definitely use masks.

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