

Research may offer relief to migraine sufferers

February 21 2024, by Josh Barney



Roughly one in five women suffer from migraines, compared to fewer than one in 10 men. Credit: John DiJulia, University Communications

Research from the University of Virginia School of Medicine could pave the way for new treatments to manage migraines and chronic pain in

women, improving their quality of life. The work is [published](#) in *The Journal of Pain*.

"We have known for a long time that [women](#) are more likely to suffer from [migraine headaches](#). This study explains their vulnerability to this common, disabling pain," said UVA Health neurologist Dr. Jaideep Kapur, co-director of the UVA Brain Institute.

Roughly one in five women is thought to suffer from the potentially debilitating headaches, compared to fewer than one in 10 men. Women are also more likely than men to develop [chronic pain](#) during their reproductive years.

Pain in women

Researchers are targeting receptors in the brain that help regulate fertility. The receptors respond to the [hormone progesterone](#), which is used to treat problematic menstrual cycles and polycystic ovarian syndrome. Those [pills](#) have been known to promote headaches in some women, and UVA's new research is revealing the hormone may have the unexpected ability to promote [pain sensitivity](#).

Findings suggest progesterone receptors in the brain help regulate pain perception. The findings also bolster the notion that reproductive hormones such as estrogen and progesterone play an important role in pain susceptibility in women.

"The discovery of progesterone receptor expression beyond the hypothalamus, particularly in regions associated with pain processing and migraine pathophysiology, opens new avenues for understanding the role of progesterone in pain modulation," researcher Suchitra Joshi said.

Joshi said research shows that targeting pain receptors could ease

migraine pain.

"Compared to broader systemic treatments, this targeted approach may offer more precise and effective therapeutic interventions to alleviate migraine pain and improve the quality of life for individuals affected by this debilitating condition," Joshi said.

Prior scientific research suggested progesterone might help control pain susceptibility, but results have been inconsistent. Progesterone appeared to reduce pain sensitivity in some instances, but not all, and other research suggested it might have the opposite effect. Efforts to use progesterone to help manage pain in people also have produced mixed results.

UVA's new research may help explain those inconsistencies. The pain-sensitizing effects caused by activating progesterone receptors in the brain may undercut the pain-reducing effects of a particular progesterone molecule, or "metabolite," called allopregnanolone.

UVA researchers say their new understanding of the complex relationship between pain, progesterone and its receptors could lead to new treatments. Researchers might use drugs, for example, to reduce pain sensitivity by blocking the activation of the progesterone receptors.

"In the future, we may be able to prevent headaches when women are most likely to suffer from them by targeting these receptors," Kapur, of UVA's Department of Neuroscience, said. "Blocking progesterone receptor-regulated signaling in the brain presents a promising avenue for novel [migraine](#) treatment, particularly in women during their reproductive years."

Kapur said that further research is needed to determine the precise mechanisms by which [progesterone receptors](#) contribute to migraines

and develop targeted treatments.

The research team consisted of Joshi, John Williamson, Shayan Moosa and Kapur.

More information: Suchitra Joshi et al, Progesterone Receptor Activation Regulates Sensory Sensitivity and Migraine Susceptibility, *The Journal of Pain* (2023). [DOI: 10.1016/j.jpain.2023.09.017](https://doi.org/10.1016/j.jpain.2023.09.017)

Provided by University of Virginia

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