

Women with asthma appear more likely to have lower levels of testosterone

September 30 2019



Lower levels of 'free' testosterone are found in women with asthma. Credit: ATS

Women with asthma appear more likely to have lower levels of "free" (not attached to proteins) testosterone than women who do not have asthma, according to new research published online in the American

Thoracic Society's *American Journal of Respiratory and Critical Care Medicine*.

In "Sex Steroid Hormones and Asthma in a Nationwide Study of U.S. Adults," Yueh-Ying Han, Ph.D.; Erick Forno, MD, MPH; and Juan C. Celedón, MD, DrPH; also report that among [obese women](#), those with [asthma](#) are more likely to have lower levels of estradiol, another sex [hormone](#), than those who do not have asthma. In addition, the researchers found that among non-[obese men](#), those with asthma are more likely to have lower levels of estradiol than those who do not have asthma.

Previous studies have reported specific differences among pediatric and adult asthma patients based on sex. Although asthma is more common in boys than in girls, asthma is more common in [women](#) than in men.

Given that [sex hormones](#) may explain these sex-specific differences, lead author Dr. Han, an epidemiologist at the UPMC Children's Hospital of Pittsburgh, and senior author Dr. Celedón, the Niels K. Jerne Professor of Pediatrics and Medicine at the University of Pittsburgh and chief of pulmonary medicine at UPMC Children's Hospital of Pittsburgh, said they conducted this study to examine whether sex hormones are associated with asthma in adult men and women. They also wanted to test whether any association varies between obese and non-obese individuals.

Their study is believed to be the first population-based study of sex hormonal levels and asthma in both men and women.

The authors analyzed information from 9,238 adults, ages 18-79, who participated in the U.S. National Health and Nutrition Examination Survey (NHANES) from 2013-16. Overall, 9 percent of the participants had asthma. Among women, the asthma rate was double that of men:

12.5 percent vs. 6.1 percent.

The study found that elevated levels of the sex hormones reduced the likelihood of asthma. Specifically:

- In women, levels of free testosterone in the highest quartile compared to the lowest quartile were associated with 44 percent lower odds of asthma.
- Among obese women, levels of free testosterone in the highest quartile compared to the lowest quartile were associated with 41 percent lower odds of asthma.
- Among obese women, levels of estradiol in the highest quartile compared to the lowest quartile were associated with 57 percent lower odds of asthma. Levels of estradiol in the second and third quartiles compared to the lowest quartile were also associated with reduced odds of asthma in these women.
- Among non-obese men, levels of estradiol in the highest quartile compared to the lowest quartile were associated with 56 percent lower odds of asthma.

Because the study was cross-sectional, it cannot determine whether sex hormone levels led to asthma. Study limitations also include lack of information about the current menopausal status of participating women, [insulin resistance](#), or environmental exposure to chemicals that may have affected sex hormone levels.

"Our study results suggest that the circulating sex hormones estradiol and free testosterone contribute to sex differences in asthma among adults," Dr. Celedón said. "Furthermore, obesity appears to modify the effect of such hormones on asthma in women and men."

He added that longitudinal studies are needed to confirm and expand on these findings.

More information: Yueh-Ying Han et al. Sex Steroid Hormones and Asthma in a Nationwide Study of U.S. Adults, *American Journal of Respiratory and Critical Care Medicine* (2019). [DOI: 10.1164/rccm.201905-0996OC](https://doi.org/10.1164/rccm.201905-0996OC)

Provided by American Thoracic Society

Citation: Women with asthma appear more likely to have lower levels of testosterone (2019, September 30) retrieved 2 May 2024 from <https://medicalxpress.com/news/2019-09-women-asthma-testosterone.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--