

# Racism aggravates treatment-resistant asthma

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Credit: University of California, San Francisco

Racial discrimination experienced by African-American children and young adults exacerbates a type of asthma known to be resistant to standard treatment, according to a study headed by researchers at UC San Francisco.

The 576 study participants, who were African-Americans with [asthma](#), aged between 8 and 21, were asked if they had been hassled, made to

feel inferior or prevented from doing something "because of your race, ethnicity, color or language," in situations including at school, getting medical care and getting services in a store or restaurant. Close to half (281) reported experiences of [racial discrimination](#) in any setting at some point in their lives.

The participants were questioned about their symptoms and medication use and were tested to gauge their response to albuterol, an inhaled bronchodilator that opens inflamed airways, the hallmark of asthma. Albuterol is the mainstay rescue therapy for asthma, but patients requiring regular doses are typically prescribed inhaled corticosteroids as a preventive treatment to improve symptoms and lung function. They also underwent blood tests to measure the amount of tumor necrosis factor-alpha (TNF-alpha), a cell-signaling protein involved in a number of diseases and identified at high levels in some asthma patients with poor response to standard treatment.

The study was published June 13, 2017, in the journal *PLOS One*.

"In asthma that is well controlled, you would expect a low response to albuterol since the patient is not having a lot of symptoms and their airways are not inflamed," said co-senior author Neeta Thakur, MD, assistant professor of medicine at UCSF. "But in people who are not prescribed control medications, or are under-dosed, you might see a higher response. In addition, for people with high TNF-alpha, inhaled corticosteroids are typically less effective."

## **Psychosocial Stress a Factor in Some Patients**

The researchers found that participants who reported that they had not experienced racial discrimination were close to twice as likely to have controlled asthma (37 percent) compared to those who said they did (21 percent). The average bronchodilator response was 1.7 per cent higher in

the discriminated group.

This disparity was amplified when researchers compared bronchodilator response among 136 discriminated participants with higher TNF-alpha. The discriminated group averaged 2.78 percent greater response to bronchodilators than the non-discriminated group. "While this amount seems small, it is enough to move this group from being classified as 'non-responders' to 'responders,' which changes the way we think about the treatment-resistant group and opens up the opportunity for other therapies," noted Thakur.

"Our results corroborate previous studies that show self-reported racial discrimination as a psychosocial stressor may affect health in youth, including asthma outcomes," said first author, Sonia Carlson, MD, formerly of UCSF School of Medicine.

"Our study shows that screening for racial discrimination might be important for those with moderate-to-severe asthma," said Carlson, who will start a medical residency at Case Western Reserve University in Cleveland.

"Patients reporting racial discrimination have been shown to have high TNF-alpha, as well as elevated levels of other cytokines," said Thakur. "Psychosocial stress secondary to racial [discrimination](#) may enhance airway inflammation by modulating immune cell function through hormonal pathways."

## **Asthma More Common and Deadlier in African-Americans**

Asthma affects 11.2 percent of African-American children, compared with 7.7 percent of Caucasians, according to the National Institutes of

Health. The asthma mortality rate is almost twice as high for African-Americans as Caucasians: 0.23 per 1,000 individuals versus 0.13 per 1,000 individuals.

**More information:** Sonia Carlson et al. Self-reported racial/ethnic discrimination and bronchodilator response in African American youth with asthma, *PLOS ONE* (2017). [DOI: 10.1371/journal.pone.0179091](https://doi.org/10.1371/journal.pone.0179091)

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