

# COPD may cause structural changes within the brain

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Chronic Obstructive Pulmonary Disease (COPD), a condition impacting nearly 24 million Americans, is often associated with disease-specific fears and avoidance of physical activity. Little is known of the structural brain processes that occur in COPD patients. A study published in the February issue of the journal *Chest* found that patients with COPD demonstrated gray matter decreases in areas of the brain that process breathlessness, fear and sensitivity to pain.

The study found patients with COPD show regionally decreased gray matter volume in the anterior, mid, and posterior cingulate cortex, hippocampus, and amygdala. Levels of degeneration in certain areas of the brain were also impacted by longer disease duration. Those individuals showed a greater fear of breathlessness and fear of physical activity, which can affect the course of the disease.

Researchers tested 30 stable outpatients with moderate-to-severe COPD and 30 control subjects with no history of the disease. All study participants underwent an MRI compatibility check to obtain structural brain images. Patients were also tested for lung function using spirometry, and assessed with the COPD Anxiety Questionnaire (CAF).

"Targeting disease-specific fears in patients with COPD might not only improve outcomes of clinical interventions such as pulmonary rehabilitation, but also reverse structural brain changes in these patients," said Andreas von Leupoldt, PhD from the Research Group Health Psychology, University of Leuven in Belgium.

The complete study, Brain Changes in Patients with Chronic Obstructive Pulmonary Disease, can be viewed in February issue of the journal *Chest*.

**More information:** Roland W. Esser et al. Structural Brain Changes in Patients With COPD, *Chest* (2016). [DOI: 10.1378/chest.15-0027](https://doi.org/10.1378/chest.15-0027)

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