

Associations of black carbon with lung function in COPD patients

*Original*

Associations of black carbon with lung function in COPD patients / Salimbene, O., Salimbene, I., Zanetti, M., Ravina, M., Panepinto, D.. - In: EUROPEAN RESPIRATORY JOURNAL SUPPLEMENT. - ISSN 0904-1850. - ELETTRONICO. - 60 supplement 66:66(2022). (European Respiratory Congress Barcellona ) [10.1183/13993003.congress-2022.2026].

*Availability:*

This version is available at: 11583/2971605 since: 2023-01-23T10:51:31Z

*Publisher:*

European Respiratory Society

*Published*

DOI:10.1183/13993003.congress-2022.2026

*Terms of use:*

This article is made available under terms and conditions as specified in the corresponding bibliographic description in the repository

*Publisher copyright*

(Article begins on next page)



# EUROPEAN RESPIRATORY *journal*

FLAGSHIP SCIENTIFIC JOURNAL OF ERS



## Associations of black carbon with lung function in COPD patients

O Salimbene, I Salimbene, M C Zanetti, M Ravina, D Panepinto

European Respiratory Journal 2022 60: 2026; DOI: 10.1183/13993003.congress-2022.2026

Article

Info & Metrics

### Abstract

**Introduction:** Few studies have investigated the 24h respiratory health effects of personal exposure to carbon black (BC) and fine particles (UFP) in COPD patients.

**Objective:** A cross-sectional study was conducted on 50 male volunteers (VTs) with mild COPD (PT), 25 residing in areas with high traffic density and 25 in low traffic areas in Turin city (IT). 24h measurements of BC and UFP exposure concentrations were taken by a background monitoring station for one year and compared with respiratory function.

**Methodology:** 3 weekly spirometry tests were performed for one year on male VTs with the following demographic characteristics: average age 66 years, average weight 76kg, height 1.68m, body mass index 27kg/m<sup>2</sup>. A diary of sleep apnea was kept and the trends of forced expiratory volume in 1s (FEV<sub>1</sub>) and forced vital capacity (FVC) were determined.

**Results:** Higher traffic density was significantly associated with lower forced expiratory volume in 1s (FEV<sub>1</sub>) and forced vital capacity (FVC). Relative to the lowest quartile of traffic density, the adjusted differences between the rising quartiles were 5.2, -14.3 and -22.5ml for FEV<sub>1</sub> (p-value of linear trend across quartiles=0.041) and 1.2, -23.5 and -34.9ml for FVC (p trend=0.010). Using distance from major roads as the simplest index of traffic-related air pollution exposure, the FEV<sub>1</sub> was -15.9ml lower (95%CI -34.4to2.9) and the FVC was lower than -24.4mL

(95%CI -46.2to-2.3) for VTs living within 160m compared to subjects living further away. FEV1/FVC ratio was not significantly associated with traffic exposure.

**Conclusion:** VTs suffering from persistent respiratory symptoms and residing in busier areas appear to be more vulnerable to BC exposure and presented greater nocturnal dyspnea.

Air pollution COPD Spirometry

## Footnotes

Cite this article as *Eur Respir J* 2022; 60: Suppl. 66, 2026.

This article was presented at the 2022 ERS International Congress, in session “-”.

This is an ERS International Congress abstract. No full-text version is available. Further material to accompany this abstract may be available at [www.ers-education.org](http://www.ers-education.org) (ERS member access only).

Copyright ©the authors 2022

## We recommend

Rapid FEV1/FVC decline is a risk factor for chronic obstructive pulmonary disease and mortality in general population

K Y Choi et al., *European Respiratory Journal*, 2022

Spirometry forced expiratory time is driven by central airway obstruction in asthmatic children

Nicole Beydon et al., *European Respiratory Journal*

Spirometry parameters and adherence to COPD treatment: is there association?

Andrii Sidorov et al., *European Respiratory Journal*, 2020

The diagnostic value of FEV6/FVC in COPD patients with severe bronchial obstruction

Iryna Nemish et al., *European Respiratory Journal*, 2020

Lung function, bronchial hyperresponsiveness and respiratory symptoms in elite athletes across sports.

G P Bernhardsen et al., *European Respiratory Journal*, 2022

Bacterial cellulose/glycolic acid/glycerol composite membrane as a system to deliver glycolic acid for anti-aging treatment

Bricard Mbituyimana et al., *Journal of Bioresources and Bioproducts*, 2021

Plant extract-loaded bacterial cellulose composite membrane for potential biomedical applications

Atiya Fatima et al., *Journal of Bioresources and Bioproducts*, 2021

Bimekizumab efficacy and safety in patients with moderate-to-severe plaque psoriasis who switched from adalimumab, ustekinumab or secukinumab: results from phase III/IIIb trials | *British Journal of Dermatology*

Georgios Kokolakis et al., *British Journal of Dermatology*, 2022

Safety and efficacy of bimekizumab through 2 years in patients with moderate-to-severe plaque psoriasis: longer-term results from the BE SURE randomized controlled trial and the open-label extension from the BE BRIGHT trial | *British Journal of Dermatology*  
Diamant Thaçi et al., *British Journal of Dermatology*, 2023

Assessment of densified fuel quality parameters: A case study for wheat straw pellet

Bidhan Nath et al., *Journal of Bioresources and Bioproducts*, 2022

---

Powered by **TREND MD**

I consent to the use of Google Analytics and related cookies across the TrendMD network (widget, website, blog). [Learn more](#)

[← Previous](#)

[^ Back to top](#)

**Vol 60 Issue suppl 66** [Table of Contents](#)

[Table of Contents](#)

[Index by author](#)

---

[✉ Email](#)

[🌐 Citation Tools](#)

[© Request Permissions](#)

[↪ Share](#)

---

### Jump To

[Article](#)

[Info & Metrics](#)

---

[Tweet](#)**More in this TOC Section****Related Articles**

*No related articles found.*

[Google Scholar](#)**Navigate**[Home](#)[Current issue](#)[Archive](#)**About the ERJ**[Journal information](#)[Editorial board](#)[Press](#)[Permissions and reprints](#)[Advertising](#)**The European Respiratory Society**[Society home](#)[myERS](#)[Privacy policy](#)[Accessibility](#)**ERS publications**[European Respiratory Journal](#)[ERJ Open Research](#)[European Respiratory Review](#)[Breathe](#)[ERS books online](#)[ERS Bookshop](#)**Help**[Feedback](#)**For authors**[Instructions for authors](#)[Publication ethics and malpractice](#)[Submit a manuscript](#)

## For readers

Alerts

Subjects

Podcasts

RSS

## Subscriptions

Accessing the ERS publications



## Contact us

European Respiratory Society

442 Glossop Road

Sheffield S10 2PX

United Kingdom

Tel: +44 114 2672860

Email: [journals@ersnet.org](mailto:journals@ersnet.org)

## ISSN

Print ISSN: 0903-1936

Online ISSN: 1399-3003

Copyright © 2023 by the European Respiratory Society