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Reduced levels of atmospheric levels of PM 2.5 and simultaneous decrease of hospital admissions for cardiovascular emergencies in Italy

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We would like to congratulate Krittanawong et al. [1] for their in depth review concerning the negative effects of high levels of atmospheric levels of PM2.5.

Epidemiological analyses have demonstrated a statistically significant correlation between high levels of PM2.5 and early and long term increased risk for myocardial infarction, stroke, heart failure, and arrhythmias. However, the effects of lowering atmospheric PM2.5 levels after chronic exposure are ill defined. Analysis of atmospheric levels of PM 2.5 from the World Health Organization shows a statistically significant correlation between population density and higher levels of PM2.5 in Europe [2]. Italy is one of the nations with higher atmospheric levels of PM2.5 either for larger density of population and industrial activity. The Italian Governments have introduced several measures to reduce air pollution, which have determined a significant decrease of atmospheric levels of PM2.5 from a mean total of 17.28 (17.00-17.54) microgr/m³ in 2015 to a mean total of 14.22 microgr/m³ (19.99-14.44) in 2019. This change was correlated with decreased hospital admissions of patients with cardiovascular disease (acute myocardial ischemia 132 896 in 2015; 123 336 in 2019/ischemic stroke 91 070 in 2015; 83 834 in 2019/congestive heart failure 178 828 in 2015; 156 487 in 2019) (p < 0.001) [3].

In the same period, the European Health Interview System did not demonstrate significant changes for the Italian population, regarding exposure to other established risk factors. The reduced number of hospital admissions for cardiovascular emergencies led to decreased costs, higher than the expenses related with national and local initiatives to reduce air pollution [4,5].

CRedit authorship contribution statement

Raimondo Gabriele: Data curation, Formal analysis, Investigation, Methodology, Validation, Writing – review & editing. **Iannicola Iannone:** Data curation, Formal analysis, Software, Visualization, Writing – review & editing. **Paolo Sapienza:** Funding acquisition, Resources, Supervision, Validation, Writing – review & editing. **Luca DI Marzo:** Data curation, Formal analysis, Supervision, Visualization,

Writing – review & editing. **Antonio V. Sterpetti:** Conceptualization, Data curation, Formal analysis, Validation, Writing – original draft.

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