COPD-Related Mortality before and after Mass COVID-19 Vaccination in Northern Italy

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ABSTRACT

BACKGROUND/OBJECTIVE
Little is known about the impact of the COVID-19 pandemic on mortality from COPD at the population level. The objective was to investigate COPD-related mortality throughout different epidemic waves in Italy before and after the vaccination campaign, which started in late December 2020 and initially targeted the population aged ≥80 years.

METHODS
Death certificates of residents in Veneto (Northeastern Italy) aged ≥40 years between 2008 and 2021 were analyzed. Age-standardized morality rates were computed for death certificates with any mention of COPD. Generalized estimating equation (GEE) models were fitted to estimate the expected mortality during the pandemic. The results were stratified by age groups of 40-79 and ≥80 years, main comorbidities, and place of death.

RESULTS
COPD was mentioned in 3478 death certificates in 2020 (+14% compared to the 2018-2019 average) and in 3133 in 2021 (+3%). Age-standardized mortality rates increased in all age and sex groups in 2020; in 2021, mortality returned to pre-pandemic levels among the elderly but not in the population aged 40-79 years (+6%). GEE models confirmed this differential trend by age. COPD-related mortality peaks were observed, especially in the first pandemic waves, with COVID-19 identified as the underlying cause of death in a relevant proportion (up to 35% in November 2020-January 2021). Mortality with comorbid diabetes and hypertensive diseases slightly increased during the pandemic.

CONCLUSION
COPD-related mortality increased at the beginning of the pandemic, due to deaths from COVID-19. The start of the vaccination campaign was associated with an important decline in COPD-related mortality, especially among the elderly, who first benefited from COVID-19 vaccines. The study findings show the role of mass vaccination in reducing COPD-related deaths during the later phases of the pandemic.

Keywords: COPD mortality; COVID-19 vaccines; epidemiology; generalized estimating equation (GEE) models.