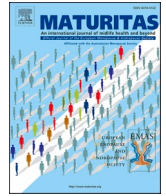




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## Letter to the Editor

## Men with COVID-19 die. Women survive...at any age!



Dear Editor

Ferretti et al. in a recently published retrospective analysis of patients hospitalized for COVID-19 reported a higher mortality in men with respect to women only after the age of 65 years, well beyond the menopause [1].

Epidemiological studies on COVID-19 patients taken as a whole have shown that men are more susceptible than women to hospitalization and severe disease [2,3]. We have recently analyzed the report of the Italian National Institute of Health on SARS-CoV-2 positive cases considering age, sex and fatality index, reporting that men showed a fatality index significantly higher than that of women (OR 1.38, 95% CI 1.36–1.40,  $P < 0.0001$ ), without any difference in infection rate [4,5]. But at variance with the data reported by Ferretti et al. [1], when analyzing the age range 20–49 (a pre-menopausal age range), the fatality rate in men was 2.2 times higher than that of women (OR 2.21, 95% CI 1.93–2.54,  $P < 0.0001$ ) [4]. Furthermore, while Ferretti et al. reported that women showed a lower fatality rate than men as COVID-19 patient age increased above the average age at menopause, our analysis demonstrated that women's fatality rate for COVID-19 is lower than that of men at any age, although it becomes closer to that of men as age increases [4,5].

The larger sample in our analysis (more than 2.5 million vs 1764 subjects) and the fact that Ferretti's patients were hospitalized for COVID-19 could explain, at least in part, such contrasting results.

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## Declaration of competing interest

The authors declare that they have no competing interest in relation to this letter.

## References

- [1] V.V. Ferretti, C. Klersy, R. Bruno, S. Cutti, R.E. Nappi, Men with COVID-19 die. Women survive, *Maturitas* 158 (2022) 34–36, <https://doi.org/10.1016/j.maturitas.2021.11.014>.
- [2] B.G. Pijls, S. Jolani, A. Atherley, R.T. Derckx, J.I.R. Dijkstra, G.H.L. Franssen, S. Hendriks, A. Richters, A. Venemans-Jellema, S. Zalpur, M.P. Zeegers, Demographic risk factors for COVID-19 infection, severity, ICU admission and death: a meta-analysis of 59 studies, *Br. Med. J. Open* 11 (2021), e044640, <https://doi.org/10.1136/bmjopen-2020-044640>.
- [3] M.C. Ramírez-Soto, G. Ortega-Cáceres, H. Arroyo-Hernández, Sex differences in COVID-19 fatality rate and risk of death: an analysis in 73 countries, 2020–2021, *Infez. Med.* 29 (2021) 402–407, <https://doi.org/10.53854/iiim-2903-11>.
- [4] M. Rossato, A. Di Vincenzo, A. Andrisani, L. Marin, F. Capone, R. Vettor, Sex and gender-related differences in COVID-19 fatality rate, *J. Women's Health* (2022) in press.
- [5] Italian Institute of Health. <https://www.epicentro.iss.it/coronavirus/sars-cov-2-sorveglianza-dati>.

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