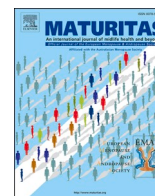




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Letter to the Editor

More on age and gender in COVID-19

Dear Editor,

We read with interest the brief commentary by Rossato et al. [1]. They reported a comparison of the fatality rate according to gender and age groups from data released by the Italian National Institute of Health on SARS-CoV-2 cases. At variance with our short report (a higher mortality in men with respect to women only after the age of 65 years) [2], they found a higher fatality rate in men than in women also in patients aged 20–49 years (OR 2.21, 95 % CI 1.93–2.54, $P < 0.0001$) [1]. Unfortunately, we still do not have access to the full original article ([3], in press) and we did not find the specific source data they mention [4]. In any case, we are aware that our results are at variance with the literature from population-based registries. For instance, Green et al. [5] analysed data from internet and national health ministry sites for data on COVID-19 cases and deaths and found a higher case fatality rate (CFR) in males than females in all age groups (with CFR ratios ranging from 1.71 to 2.11 in those aged ≤ 59 years).

However, our data, derived from a registry of hospitalized patients in the first and second waves, might lack the power to show a difference in the 18–49 age group due to the very low numbers of both hospitalizations and observed deaths in this category (4/120 in females and 3/118 in males). It is also relevant to mention that young patients were hospitalized only with very severe disease, possibly obscuring the gender effect. Moreover, our data are in agreement with those reported by Raimondi et al. [6] in a similar setting. They analysed COVID-19 patients hospitalized in Bergamo (Italy) and obtained similar mortality rates in males and females in the younger age group (only 2/32 in females and 7/77 in males among those aged ≤ 59 years).

Anyway, we agree with Rossato et al. that a different population setting may underlie the discrepancy between their results and our analysis, which, in any case, we conducted with the aim of exploring different age groups using a cut-off of 50 years as a crude proxy for menopausal status.

Funding

No funding from an external source supported the publication of this letter.

Declaration of competing interest

The authors declare that they have no competing interest in relation

to this letter.

References

- [1] M. Rossato, A. Andrisani, E. Zabeo, A. Di Vincenzo, Men with COVID-19 die. Women survive...at any age!, *Maturitas* (2022) submitted.
- [2] 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.2021.12.001>.
- [3] M. Rossato, A. Di Vincenzo, A. Andrisani, L. Marin, F. Capone, R. Vettor, Re: "Sex and Gender-Related Differences in COVID-19 Diagnoses and SARS-CoV-2 Testing Practices During the First Wave of the Pandemic: The Dutch Lifelines COVID-19 Cohort Study" by Ballering et al. *J Womens Health (Larchmt)*, 2022 May 31, <https://doi.org/10.1089/jwh.2022.0015>.
- [4] Italian Institute of Health. <https://www.epicentro.iss.it/coronavirus/sars-cov-2-sorveglianza-dati>.
- [5] M.S. Green, D. Nitzan, N. Schwartz, Y. Niv, V. Peer, Sex differences in the case-fatality rates for COVID-19 - a comparison of the age-related differences and consistency over seven countries, *PLoS ONE* 16 (2021), e0250523, <https://doi.org/10.1371/journal.pone.0250523>.
- [6] F. Raimondi, L. Novelli, A. Ghirardi, F.M. Russo, D. Pellegrini, R. Biza, R. Trapasso, L. Giuliani, M. Anelli, M. Amoroso, C. Allegri, G. Imeri, C. Sanfilippo, S. Comandini, E. Hila, L. Manesso, L. Gandini, P. Mandelli, M. Monti, M. Gori, M. Senni, F.L. Lorini, M. Rizzi, T. Barbui, L. Paris, A. Rambaldi, R. Cosentini, G. Guagliumi, S. Cesa, M. Colledan, M. Sessa, A. Masciulli, A. Gavazzi, S. Buoro, G. Remuzzi, P. Ruggerenti, A. Callegaro, A. Gianatti, C. Farina, A. Bellasi, S. Sironi, S. Fagioli, F. Di Marco, HPG23 COVID-19 Study Group, COVID-19 and gender: lower rate but same mortality of severe disease in women-an observational study, *BMC Pulm. Med.* 21 (2021) 96, <https://doi.org/10.1186/s12890-021-01455-0>.

Virginia V. Ferretti^a, Catherine Klersy^a, Raffaele Bruno^{b,c}, Sara Cutti^d,
Rossella E. Nappi^{c,e,*}

^a Unit of Clinical Epidemiology & Biostatistic, Foundation IRCCS San Matteo Hospital, Pavia 27100, Italy

^b Division of Infectious Diseases, Foundation IRCCS San Matteo Hospital, Italy

^c Department of Clinical, Surgical, Diagnostic and Pediatric Science, University of Pavia, Pavia 27100, Italy

^d Medical Direction, Foundation IRCCS San Matteo Hospital, Pavia 27100, Italy

^e Research Center for Reproductive Medicine, Gynecological Endocrinology and Menopause, Obstetrics and Gynecology Unit, Foundation IRCCS San Matteo Hospital, Pavia 27100, Italy

* Corresponding author at: Department of Clinical, Surgical, Diagnostic and Pediatric Science, University of Pavia, Pavia 27100, Italy.
E-mail address: renappi@tin.it (R.E. Nappi).

