



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.



Equal Incidence of COVID-19 among Homeless and Non-Homeless Emergency Department Patients



Dear Editor,

We read with interest the article from Keller et al. [1] on Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) incidence among patients presenting to the emergency department of their university hospital. In the article, the authors retrospectively compared demographic characteristics of homeless and non-homeless patients positive at antigen or Polymerase Chain Reaction (PCR) nasopharyngeal swab for SARS-CoV-2, concluding that – based on their data – homelessness was not an independent risk factor for Coronavirus Disease 19 (COVID-19).

During the pandemic, the primary healthcare services of the Eleemosynaria Apostolica, Vatican City, offered a SARS-CoV-2 infection control service for persons experiencing homelessness through nasopharyngeal swab tests and prevention measures [2,3]. Tests were performed in all homeless patients presenting to these facilities seeking general medical care over a period of 16 months. As of October 2021, 2107 sheltered and unsheltered homeless persons have been tested for COVID-19, with a positivity rate at PCR test of 8.29%.

In this letter, we would like to focus on the main findings that the authors reported in their article, and briefly compare them with the experience of our primary healthcare facilities serving the homeless population in the Vatican City State, an enclave of the city of Rome, Italy. In fact, emergency departments and primary healthcare facilities have several common characteristics when assisting homeless people, as they often serve as medical and safety nets allowing access to free and rapid medical assistance.

SARS-CoV-2 prevalence among homeless persons. The authors reported a SARS-CoV-2 prevalence in homeless patients referring to their emergency department of 5.5%. Our data show an overall prevalence of 8.29%; however, this may be due to the tendency of asymptomatic homeless patients to refer to primary healthcare services rather than to emergency departments when seeking for general care. This, as correctly stated by the authors, may have led to an underestimation of the prevalence among the homeless in their study, that focused exclusively on patients presenting to the emergency department. Indeed, other studies available in the literature confirm a slightly higher – although variable – prevalence of COVID-19 among homeless persons, ranging from 2.9% reported by Self et al. [4] to 11.7% in a study by Karb et al. [5]. The positivity rate may also consistently increase in case of outbreaks, as described – among the others – by Bagget et al. [6] in Boston (36%), Tobolowsky et al. [7] in Seattle (18.5%) and Imbert et al. [8] in San Francisco (67%).

Risk factors and infection control measures. The authors correctly mentioned the numerous risk factors and peculiarities of homeless

persons, further worsened by the COVID-19 pandemic. They include difficulties in maintaining social distancing, hygiene, and self-quarantine, in addition to higher rates of comorbidities and of alcohol and tobacco use that could lead to more severe forms of COVID-19. Based on our experience, we remark the role of infection control measures that are often undervalued in congregate settings for people experiencing homelessness, and that may lead to outbreaks in shelters following physical proximity, elevate population density, and high resident turnover [9]. We certainly recommend the use of prevention measures to intercept new clusters of infection; they should include routine surveillance with antigen or PCR tests in guests and staff, strict hygiene rules inside and outside the shelter, adequate distancing protocols, frequent temperature checks, and health education programs [10]. In addition, we would like to remark the importance of education of homeless persons on methods and best practices to prevent infection spread, as well as on the individual and community benefits of accepting COVID-19 vaccination [11,12].

Clinical symptoms. The authors did not report the rate of symptomatic and asymptomatic patients in their sample, although they correctly stated that SARS-CoV-2 infection was searched in all patients presenting to their emergency department regardless of symptomatology. In our sample, nearly two thirds of the positive cases were asymptomatic [13], as also reported in other studies [10,14]. This confirms the crucial role of asymptomatic carriers in infection spread; herein, we remark the importance of early identification of asymptomatic patients especially among the sheltered homeless [15].

In conclusion, we considerably appreciated the study by Keller et al. as the impact of COVID-19 pandemic on fragile populations, such as the homeless, is often overlooked and the description of personal experiences on these populations is remarkably important to increase general and scientific awareness on the topic. In addition, we would like to stress that the intrinsic vulnerability of people experiencing homelessness and their living settings can make them more susceptible to SARS-CoV-2 contagion and to more severe forms of COVID-19. Priorities for this population should include routine screening with COVID-19 tests, prevention, education, and promotion of mass vaccination programs for the establishment of herd immunity.

Declaration of interests

None.

Funding

None.

Acknowledgements

The authors wish to thank His Holiness Pope Francis for providing directions, structures, and equipment to make healthcare available for vulnerable populations through the Offices of Papal Charities

(Eleemosynaria Apostolica), and Cardinal Konrad Krajewski, Apostolic Almoner, for the extraordinary efforts in the realization of this mission. The authors would also like to thank the Istituto di Medicina Solidale for the support in primary care.

References

- [1] Keller M, Shreffler J, Wilmes K, Polites A, Huecker M. Equal incidence of COVID-19 among homeless and non-homeless ED patients when controlling for confounders. *Am J Emerg Med.* 2021. <https://doi.org/10.1016/j.ajem.2021.09.057>.
- [2] Ralli M, Cedola C, Urbano S, Latini O, Shkodina N, Morrone A, et al. Assessment of SARS-CoV-2 infection through rapid serology testing in the homeless population in the City of Rome, Italy. Preliminary results. *J Public Health Res.* 2020;9(4):1986. <https://doi.org/10.4081/jphr.2020.1986>.
- [3] Ralli M, De-Giorgio F, Soave PM, Ercoli L, Arcangeli A. Mass vaccination campaign for residents and workers and assistance to vulnerable populations during COVID-19 pandemic: the experience of the healthcare services of the Vatican City. *Lancet Reg Health Eur.* 2021;2:100053. <https://doi.org/10.1016/j.lanep.2021.100053>.
- [4] Self JL, Montgomery MP, Toews KA, Samuels EA, Imbert E, McMichael TM, et al. Shelter characteristics, infection prevention practices, and universal testing for SARS-CoV-2 at homeless shelters in 7 US urban areas. *Am J Public Health.* 2021:e1–6. <https://doi.org/10.2105/AJPH.2021.306198>.
- [5] Karb R, Samuels E, Vanjani R, Trimbun C, Napoli A. Homeless shelter characteristics and prevalence of SARS-CoV-2. *West J Emerg Med.* 2020;21(5):1048–53. <https://doi.org/10.5811/westjem.2020.7.48725>.
- [6] Baggett TP, Keyes H, Sporn N, Gaeta JM. Prevalence of SARS-CoV-2 infection in residents of a large homeless shelter in Boston. *JAMA.* 2020;323(21):2191–2. <https://doi.org/10.1001/jama.2020.6887>.
- [7] Tobolowsky FA, Gonzales E, Self JL, Rao CY, Keating R, Marx GE, et al. COVID-19 outbreak among three affiliated homeless service sites - King County, Washington, 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69(17):523–6. <https://doi.org/10.15585/mmwr.mm6917e2>.
- [8] Imbert E, Kinley PM, Scarborough A, Cawley C, Sankaran M, Cox SN, et al. Coronavirus disease 2019 outbreak in a San Francisco homeless shelter. *Clin Infect Dis.* 2021; 73(2):324–7. <https://doi.org/10.1093/cid/ciaa1071>.
- [9] Ralli M, Arcangeli A, Morrone A, Ercoli L. Homeless shelter characteristics and prevalence of SARS-CoV-2. *West J Emerg Med.* 2021;22(2):232–3. <https://doi.org/10.5811/westjem.2020.11.50337>.
- [10] Rogers JH, Link AC, McCulloch D, Brandstetter E, Newman KL, Jackson ML, et al. Characteristics of COVID-19 in homeless shelters : a community-based surveillance study. *Ann Intern Med.* 2020. <https://doi.org/10.7326/M20-3799>.
- [11] Longchamps C, Ducarroz S, Crouzet L, Vignier N, Pourtau L, Allaire C, et al. COVID-19 vaccine hesitancy among persons living in homeless shelters in France. *Vaccine.* 2021;39(25):3315–8. <https://doi.org/10.1016/j.vaccine.2021.05.012>.
- [12] Paudyal V, Racine M, Hwang SW. COVID-19 vaccination amongst persons experiencing homelessness: practices and learnings from UK, Canada and the US. *Public Health.* 2021. <https://doi.org/10.1016/j.puhe.2021.08.015>.
- [13] Ralli M, Morrone A, Arcangeli A, Ercoli L. Asymptomatic patients as a source of transmission of COVID-19 in homeless shelters. *Int J Infect Dis.* 2020. <https://doi.org/10.1016/j.ijid.2020.12.031>.
- [14] Gandhi M, Yokoe DS, Havlir DV. Asymptomatic transmission, the Achilles' heel of current strategies to control Covid-19. *N Engl J Med.* 2020;382(22):2158–60. <https://doi.org/10.1056/NEJMe2009758>.
- [15] Sayampanathan AA, Heng CS, Pin PH, Pang J, Leong TY, Lee VJ. Infectivity of asymptomatic versus symptomatic COVID-19. *Lancet.* 2021;397(10269):93–4. [https://doi.org/10.1016/S0140-6736\(20\)32651-9](https://doi.org/10.1016/S0140-6736(20)32651-9).

Massimo Ralli

*Department of Sense Organs, Sapienza University of Rome, Italy
Primary Care Services, Eleemosynaria Apostolica, Vatican City State*
*Corresponding author at: Department of Sense Organs, Sapienza
University of Rome, Viale del Policlinico 155, 00186 Rome, Italy.

E-mail address:

E-mail address: massimo.ralli@uniroma1.it

Fabio De-Giorgio

*Primary Care Services, Eleemosynaria Apostolica, Vatican City State
Department of Health Care Surveillance and Bioethics, section of Legal
Medicine, Università Cattolica del Sacro Cuore, Rome, Italy
Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy*

Andrea Arcangeli

*Department of Emergency, Anesthesiology and Resuscitation Sciences,
Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy*

Lucia Ercoli

*Primary Care Services, Eleemosynaria Apostolica, Vatican City State
Department of Biomedicine and Prevention, Tor Vergata University, Rome,
Italy*