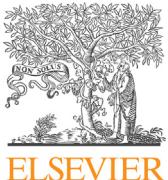




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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

## Poverty, inequality and COVID-19: the forgotten vulnerable

On various occasions, the phrase, 'COVID-19 does not discriminate' has been repeated. This, however, is a dangerous myth, sidelining the increased vulnerability of those most socially and economically deprived. In response to the pandemic, UK policy-makers imposed lockdown on its 66 million citizens, an act without parallel since World War II. Although enacted for the public's well-being, these policies have shown disregard towards those most economically disadvantaged. To date, policymakers have targeted people with multiple comorbidities after identifying them as the most vulnerable. However, this medical model of disease risks ignoring social factors, which can increase exposure to and mortality from coronavirus disease 2019 (COVID-19).

For people of low socio-economic status (SES), a number of factors increase their exposure to COVID-19. First, economically disadvantaged people are more likely to live in overcrowded accommodation—7% of people from the poorest 20% of UK households live in overcrowded housing, a risk factor for lower respiratory tract infections.<sup>1,2</sup> Poor housing conditions, limited access to personal outdoor space and overcrowding will reduce compliance with social distancing. Second, financially poorer people are often employed in occupations that do not provide opportunities to work from home.<sup>3</sup> This includes but is not limited to supermarket and warehouse workers, those in certain forms of public transport and bus drivers, whose tragic deaths we have already witnessed.

Third, those in low SES groups are more likely to have unstable work conditions and incomes, conditions exacerbated by the responses to COVID-19 and its aftermath.<sup>4</sup> Such financial uncertainty disproportionately harms the mental health of those in low SES groups and exacerbates their stress.<sup>5</sup> Heightened stress is known to weaken the immune system, increasing susceptibility to a range of diseases and the likelihood of health risk behaviours.<sup>5,6</sup> Therefore, poverty may not only increase one's exposure to the virus, but also reduce the immune system's ability to combat it.

Fourth, people of low SES present to healthcare services at a more advanced stage of illness, resulting in poorer health outcomes.<sup>7</sup> This will likely lead to poorer health outcomes from COVID-19 for economically disadvantaged people. Fifth, access to health care is also determined by a person's ability to use health services 'with ease, and having confidence that you will be treated with respect'.<sup>8</sup> This can be hindered by language barriers, patients' attitudes towards healthcare providers and the behaviour and attitudes of healthcare professionals towards minority patients.<sup>8</sup> Health care does not exist in isolation, so discrimination in wider society influences healthcare professionals' practice and patients' expectations, such as the anticipation of being dismissed, ridiculed or humiliated, which may deter minority groups from accessing

health care. These factors may also reduce access to health care for COVID-19 for patients of low SES.

Finally, there is emerging evidence that hypertension and diabetes are risk factors for death from COVID-19.<sup>9</sup> This is notable because poverty is itself a risk factor for these conditions, with the Marmot Review showing that it increases the risk of cardiovascular disease, obesity, diabetes and hypertension,<sup>10</sup> suggesting people of low SES have an increased susceptibility to COVID-19 mortality.

In summary, a combination of factors leaves the most economically disadvantaged particularly vulnerable to COVID-19. Possible causal mechanisms include an increased exposure to the virus, the stress and comorbidities associated with poverty and reduced access to health care. UK policymakers rapidly identified people with multiple comorbidities as particularly vulnerable. However, they must expand their definition of vulnerability to include social factors as risks for COVID-19. The pandemic has highlighted the stark inequalities within society, and it will likely exacerbate them. To address the vulnerabilities of the most economically disadvantaged within society, policymakers must introduce long-term legislation to improve social welfare.

## Competing interests

None declared.

## References

1. Non-decent housing and overcrowding [Internet]. Joseph Rowntree Foundation. [cited 2020 Apr 17]. Available from: <https://www.jrf.org.uk/data/non-decent-housing-and-overcrowding>.
2. Cardoso MRA, Cousens SN, Siqueira LF de G, Alves FM, D'Angelo LAV. Crowding: risk factor or protective factor for lower respiratory disease in young children? [Internet] *BMC Publ Health* 2004 Jun 3;4(1). Article number: 19 (2004) [cited 2020 Apr 17]; Available from: <http://www.ncbi.nlm.nih.gov/pubmed/15176983>.
3. 2018 annual averages [Internet] *Economic News Release - employed persons working on main job at home, workplace, and time spent working at each location by class of worker, occupation, and earnings*. U.S Bureau of Labor Statistics; 2019 [cited 2020 Apr 18]. Available from: <https://www.bls.gov/news.release/atus.t07.htm>.
4. 4in10. Inner City Pressure: the voices of low income working families in inner London on the complex challenges they face. 2016.
5. Algren MH, Ekholm O, Nielsen L, Ersbøll AK, Bak CK, Andersen PT. Associations between perceived stress, socioeconomic status, and health-risk behaviour in deprived neighbourhoods in Denmark: a cross-sectional study. *BMC Publ Health* 2018 Feb 13;18(1).
6. Segerstrom SC, Miller GE. Psychological stress and the human immune system: a meta-analytic study of 30 Years of inquiry. *Psychol Bull* 2004 Jul;601–30.
7. Cookson R, Propper C, Asaria M, Raine R. Socio-economic inequalities in health care in England [Internet] *Fisc Stud* 2016 Sep 1. <https://doi.org/10.1111/j.1475-5890.2016.12109> [cited 2020 Apr 18]; Available from:.

8. Szczepura A. Access to health care for ethnic minority populations. *Postgrad Med J* 2005 Mar;141–7.
9. Guan W, Liang W, Zhao Y, Liang H, Chen Z, Li Y, et al. Comorbidity and its impact on 1590 patients with covid-19 in China: a nationwide analysis. *Eur Respir J* 2020 Mar 26;55(5).
10. Marmot M, Allen J, Goldblatt P, Boyce T, McNeish D, Grady M, et al. *Fair Society, Healthy Lives - the Marmot Review*. 2010.

S. Assi, V.A. Unadkat  
University of Southampton School of Medicine, UK

B. Patel  
University of Liverpool School of Medicine, UK

R. Ravindrane, H. Wardle  
London School of Hygiene and Tropical Medicine, UK

\* Corresponding author. London School of Hygiene and Tropical Medicine, UK.  
E-mail address: [mail.patel.jay@gmail.com](mailto:mail.patel.jay@gmail.com) (J.A. Patel).

J.A. Patel<sup>\*</sup>  
London School of Hygiene and Tropical Medicine, UK  
University of Southampton School of Medicine, UK  
F.B.H. Nielsen  
London School of Hygiene and Tropical Medicine, UK  
A.A. Badiani  
University of Liverpool School of Medicine, UK

1 May 2020

Available online 14 May 2020