



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.

- 7 White F. Primary health care and public health: foundation of universal health systems. *Med Princ Pract* 2015; **24**: 103–16.
- 8 Lumbiganon P, Laopaiboon M, Gülmezoglu AM, et al. World Health Organization Global Survey on Maternal and Perinatal Health Research Group. Method of delivery and pregnancy outcomes in Asia: the WHO global survey on maternal and perinatal health 2007–08. *Lancet* 2010; **375**: 490–99.
- 9 Campaign for Tobacco-Free Kids. Tobacco control laws. 2021. <https://www.tobaccocontrol.org/legislation/country/china/summary> (accessed May 15, 2021).
- 10 Shrimpton R, Rokx C. The double burden of malnutrition: a review of global evidence. Washington, DC: The World Bank, 2012.
- 11 Burki T. China's successful control of COVID-19. *Lancet Infect Dis* 2020; **20**: 1240–41.
- 12 Lacina L. COVID-19 reveals gaps in health systems: WHO briefing. World Economic Forum. May 6, 2020. <https://www.weforum.org/agenda/2020/05/covid-19-reveals-gaps-in-public-health-system-who-briefing/> (accessed May 13, 2021).
- 13 WHO. The Global Strategy for Women's, Children's and Adolescents' Health (2016–2030): survive, thrive, transform. 2015. <https://www.who.int/life-course/partners/global-strategy/ewecglobalstrategyreport-200915.pdf?ua=1> (accessed May 13, 2021).

From routine data collection to policy design: sex and gender both matter in COVID-19



Vaccine equity is a growing concern of COVID-19 vaccination roll-outs and uptake globally. Gender has a role in vaccine uptake¹ but goes largely unrecognised in vaccine policies and programmes, undermining attempts to ensure equity. There is a wider gender blind spot that pervades national health responses to COVID-19 beyond vaccination, ranging from the way countries collect and report data to the commitments they make in pandemic health policies.

Socially constructed gender norms can mean that women's access to COVID-19 prevention, testing, and treatment, including vaccination, is hindered by unaffordable fees or inability to travel to services.² In immunisation programmes before COVID-19, factors such as low autonomy, labour responsibilities, and unpaid care burdens were reasons for gendered barriers to vaccination that disadvantaged women.³ COVID-19 vaccine uptake may be impacted by poorer access to health services and information about vaccines or perceptions of lower risk, among other factors.⁴ Sex is thought to account for greater efficacy of some vaccines in women compared with men due to the different regulation of immune responses related to factors that include hormonal and chromosomal differences.⁵

According to the Global Health 50/50 (GH5050) COVID-19 Sex-Disaggregated Data Tracker, among countries reporting COVID-19 vaccine uptake data, women comprise 53% of individuals receiving at least one dose.⁶ However, only 34 of the roughly 180 countries that have begun vaccination programmes reported sex-disaggregated data on vaccine coverage between mid-April and mid-May, 2021.⁶

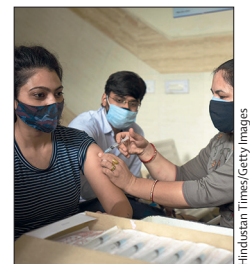
Poor recognition by governments of the importance of considering sex and gender is also evident in national

policies designed to guide vaccine roll-out. The GH5050 Sex, Gender and COVID-19 Health Policy Portal shows only five (9%) of 58 vaccine policies available as of March, 2021, mentioned gender. England, India, and Lebanon were the only countries found to include gender in their COVID-19 vaccine policies and to publicly report on vaccine uptake by sex.^{6,7} However, the inclusion of gender is just a starting point. In-depth analysis of the UK Government's COVID-19 Scientific Advisory Group for Emergencies (SAGE) meetings found that considerations of gender largely reproduced gendered stereotypes, including uneven distribution of domestic responsibilities, rather than engaging with ways to transform these norms.⁸

Similarly, only 52% of countries reported sex-disaggregated COVID-19 data on testing, cases, hospitalisations, admissions to intensive care units, or deaths between mid-April and mid-May, 2021.⁶ Additionally, fewer than 33 (9%) of 388 policies relating to vaccination, public health messaging, clinical management, protection of health-care workers, and maintenance of essential health services acknowledged or addressed gender norms in some way.⁷

These gender gaps persist despite an abundance of data showing sex differences in COVID-19 outcomes.^{9–11} GH5050's COVID-19 tracker shows that men are less likely to be vaccinated and tested for COVID-19, but more likely to be admitted to hospital with the disease, and more likely to die from COVID-19 than women.⁶

Failure to include sex and gender in data collection and policy is not regionally specific. Although high-income countries are more likely to report sex-disaggregated COVID-19 data than low-income and middle-income countries, reporting rates are low even among the



Published Online
June 10, 2021
[https://doi.org/10.1016/S0140-6736\(21\)01326-X](https://doi.org/10.1016/S0140-6736(21)01326-X)

high-income group.⁶ As of mid-May, 2021, 54% of high-income countries had reported sex-disaggregated data for COVID-19 deaths for the past 3 months, compared with 34% of low-income countries.⁶ For data on COVID-19 cases and deaths, about one in three countries that had previously reported sex-disaggregated data were no longer reporting by May, 2021, suggesting that some countries have decided to discontinue such reporting.⁶

There has been no shortage of calls for sex-disaggregated COVID-19 surveillance data,^{12,13} and gender-responsive national public health policies.¹⁴ Moreover, as signatories of the 2030 Sustainable Development Goal (SDG) agenda, most countries have committed to sex-disaggregated reporting on SDG indicators, including the health goal. It is, therefore, concerning that so many countries, across regions and income levels, consistently fail to account for sex and gender in COVID-19 responses.

One factor could be low gender diversity throughout the chain of influence on public health decisions, including among researchers, pandemic policy advisers, and leaders. Evidence shows that women's leadership is associated with a higher likelihood of sex and gender being incorporated into research.^{15,16} Yet women accounted for just 38% of first authors of COVID-19-related research published between February, 2020, and January, 2021,¹⁷ and of the 11 prominent research and surveillance organisations reviewed by GH5050 in 2021, only three (27%) were headed by women.¹⁸

Policy processes that engage women, gender experts, and groups that are marginalised due to identities, such as disability, gender identity, ethnicity, and sexuality, are essential to the development of gender responsive and inclusive health responses.^{19,20} However, decision making in relation to national COVID-19 responses has largely adopted an exclusionary, male-dominated approach: a UN Development Programme review found that only 24% of national COVID-19 task force members globally are women.²¹

Pandemic responses that do not recognise the importance of sex and gender will always be less equitable and less effective. To realise the ambition of universal COVID-19 vaccination, governments must bring sex and gender to the fore. The longer calls to change course go unheeded, the greater will be the toll of the COVID-19 pandemic on everyone's health.

We all contributed to the Sex, Gender and COVID-19 Health Policy Portal and the COVID-19 Sex-Disaggregated Data Tracker that are discussed in this Comment. ME-C reports working on grants from the Bill & Melinda Gates Foundation to Global Health 50/50. The authors declare no other competing interests. We are grateful to Kent Buse, Sarah Hawkes, Athena Pantazis, Anna Purdie, and Sonja Tanaka for their support for this Comment. The findings of the COVID-19 Sex-Disaggregated Data Tracker and the Sex, Gender and COVID-19 Health Policy Portal cited would not be possible without the dedicated work of the Global Health 50/50 Collective, the African Population and Health Research Center, Nairobi, Kenya, and the International Center for Research on Women, New Delhi, India.

*Mireille Evagora-Campbell, Kakoli Borkotoky, Sneha Sharma, Michelle Mbutia
mireille.evagora-campbell@ucl.ac.uk

Global Health 50/50, London WC1N 1EH, UK (ME-C); International Center for Research on Women, New Delhi, India (KB, SS); African Population and Health Research Center, Nairobi, Kenya (MM)

- 1 Harman S, Crabb AH, Morgan R Smith J, Wenham C. COVID-19 vaccines and women's security. *Lancet* 2020; **397**: 357–58.
- 2 UN Office for the Coordination of Humanitarian Affairs. Global humanitarian response plan: COVID-19: United Nations Coordinated Appeal, April–December 2020. Geneva: UN Office for the Coordination of Humanitarian Affairs, 2020. <https://www.unocha.org/sites/unocha/files/Global-Humanitarian-Response-Plan-COVID-19.pdf> (accessed June 8, 2021).
- 3 Gavi, the Vaccine Alliance. Gender and immunisation. November, 2019. https://www.gavi.org/sites/default/files/document/2019/FS_GAVI_Gender_EN.pdf (accessed May 12, 2021).
- 4 Gavi, the Vaccine Alliance. International Women's Day: Heidi Larson and the fight against vaccine hesitancy. March, 2021. <https://www.gavi.org/vaccineswork/iwd2021/international-womens-day-heidi-larson-and-fight-against-vaccine-hesitancy> (accessed May 17, 2021).
- 5 Klein SL, Flanagan KL. Sex differences in immune responses. *Nat Rev Immunol* 2016; **16**: 626–38.
- 6 The Sex, Gender and COVID-19 Project. The COVID-19 Sex-Disaggregated Data Tracker. 2021. <https://globalhealth5050.org/the-sex-gender-and-covid-19-project/the-data-tracker/?explore=variable> (accessed May 17, 2021).
- 7 The Sex, Gender and COVID-19 Project. The Sex, Gender and COVID-19 Health Policy Portal. 2021. <https://globalhealth5050.org/the-sex-gender-and-covid-19-project/policy-portal/> (accessed May 17, 2021).
- 8 Wenham C, Herten-Crabb A. Why we need a gender advisor on SAGE. *LSE Public Pol Rev* 2021; **1**: 7.
- 9 Peckham H, de Grujter NM, Raine C, et al. Male sex identified by global COVID-19 meta-analysis as a risk factor for death and ICU admission. *Nat Commun* 2020; **11**: 6317.
- 10 Scully EP, Haverfield J, Ursin RL, Tannenbaum C, Klein SL. Considering how biological sex impacts immune responses and COVID-19 outcomes. *Nat Rev Immunol* 2020; **20**: 442–47.
- 11 Bwire GM. Coronavirus: why men are more vulnerable to Covid-19 than women? *SN Compr Clin Med* 2020; **2**: 874–76.
- 12 WHO. COVID-19 Strategic Preparedness and Response Plan (SPRP) 2021. February, 2021. <https://www.who.int/publications/i/item/WHO-WHE-2021.02> (accessed April 23, 2021).
- 13 UN General Assembly. A/RES/75/157. Women and girls and the response to the coronavirus disease (COVID-19). December, 2020. <https://undocs.org/en/A/RES/75/157> (accessed April 23, 2021).
- 14 WHO. Gender and COVID-19: advocacy brief. May, 2020. <https://www.who.int/publications/i/item/gender-and-covid-19> (accessed April 23, 2021).
- 15 Merriman R, Galizia I, Tanaka S, Sheffel A, Buse K, Hawkes S. The gender and geography of publishing: a review of sex/gender reporting and author representation in leading general medical and global health journals. *BMJ Glob Health* 2021; **6**: e005672.
- 16 Sugimoto CR, Ahn YY, Smith E, Macaluso B, Larivière V. Factors affecting sex-related reporting in medical research: a cross-disciplinary bibliometric analysis. *Lancet* 2019; **393**: 550–59.
- 17 Lerchenmüller C, Schmallenbach L, Jena AB, et al. Longitudinal analyses of gender differences in first authorship publications related to COVID-19. *BMJ Open* 2021; **11**: e045176.

- 18 Global Health 50/50. Gender equality: flying blind in a time of crisis: the Global Health 50/50 report 2021. London: Global Health 50/50, 2021. <https://globalhealth5050.org/wp-content/uploads/Global-Health-5050-2021-Report.pdf?v2> (accessed June 9, 2021).
- 19 Crespi-Lloréns N, Hernández-Aguado I, Chilet-Rose E. Have policies tackled gender inequalities in health? A scoping review. *Int J Environ Res Public Health* 2021; **18**: 327.
- 20 Shannon G, Jansen M, Williams K, et al. Gender equality in science, medicine, and global health: where are we at and why does it matter? *Lancet* 2019; **393**: 10171.
- 21 UN Development Programme, UN Women, UN Volunteers, University of Pittsburgh. COVID-19 Global Gender Response Tracker. 2021. <https://data.undp.org/gendertracker/> (accessed May 12, 2021).

Addendum: competing interests and the origins of SARS-CoV-2



In February, 2020, 27 public health experts co-authored a Correspondence in *The Lancet* (“Statement in support of the scientists, public health professionals, and medical professionals of China combatting COVID-19”),¹ supporting health professionals and physicians in China during the early stages of the COVID-19 pandemic. In this letter, the authors declared no competing interests. Some readers have questioned the validity of this disclosure, particularly as it relates to one of the authors, Peter Daszak. In line with guidance from the International Committee of Medical Journal Editors, medical journals ask authors to report financial and non-financial relationships that may be relevant to interpreting the content of their manuscript.² There may be differences in opinion as to what constitutes a competing interest. Transparent reporting allows readers to make judgments about these interests. Readers, in turn, have their own interests that could influence their evaluation of the work in question. With these facts in mind, *The Lancet* invited the 27 authors of the letter to re-evaluate their competing interests. Peter Daszak has expanded on his disclosure statements for three pieces relating to COVID-19 that he co-authored or contributed to in *The Lancet*—the February, 2020, Correspondence,¹ as well as a Commission Statement³ and a Comment⁴ for the *Lancet* COVID-19 Commission. The updated disclosure statement from Peter Daszak is:

“PD’s remuneration is paid solely in the form of a salary from EcoHealth Alliance, a 501(c)(3) non-profit organisation. EcoHealth Alliance’s mission is to develop science-based solutions to prevent pandemics and promote conservation. Funding for this work comes from a range of US Government funding agencies and non-governmental sources. All past and current funders are listed publicly, and full financial accounts are filed annually and published. EcoHealth Alliance’s work in China was previously funded by the US National Institutes of Health (NIH) and the United States Agency for International Development (USAID). Neither PD nor EcoHealth Alliance have received funding from the People’s Republic of China. PD joined the WHO–China joint

global study on the animal origins of SARS-CoV-2 towards the end of 2020 and is currently a member. As per WHO rules, this work is undertaken as an independent expert in a private capacity, not as an EcoHealth Alliance staff member. The work conducted by this study was published in March, 2021. EcoHealth Alliance’s work in China includes collaboration with a range of universities and governmental health and environmental science organisations, all of which are listed in prior publications, three of which received funding from US federal agencies as part of EcoHealth Alliance grants or cooperative agreements, as publicly reported by NIH. EcoHealth Alliance’s work in China is currently unfunded. All federally funded subcontractees are assessed and approved by the respective US federal agencies in advance and all funding sources are acknowledged in scientific publications as appropriate. EcoHealth Alliance’s work in China involves assessing the risk of viral spillover across the wildlife–livestock–human interface, and includes behavioural and serological surveys of people, and ecological and virological analyses of animals. This work includes the identification of viral sequences in bat samples, and has resulted in the isolation of three bat SARS-related coronaviruses that are now used as reagents to test therapeutics and vaccines. It also includes the production of a small number of recombinant bat coronaviruses to analyse cell entry and other characteristics of bat coronaviruses for which only the genetic sequences are available. NIH reviewed the planned recombinant virus work and deemed it does not meet the criteria that would warrant further specific review by its Potential Pandemic Pathogen Care and Oversight (P3CO) committee. All of EcoHealth Alliance’s work is reviewed and approved by appropriate research ethics committees, Institutional Animal Care and Use Committee, Institutional Review Boards for biomedical research involving human subjects, P3CO oversight administrators, and biosafety committees, as listed on all relevant publications.”

Published Online
June 21, 2021
[https://doi.org/10.1016/S0140-6736\(21\)01377-5](https://doi.org/10.1016/S0140-6736(21)01377-5)
See [Comment Lancet](#) 2021; **397**: 947–50
See [Correspondence Lancet](#) 2020; **395**: e42–43
See [Commission Statement Lancet](#) 2020; **396**: 1102–24

The Correspondence, Commission Statement, and Comment are linked online to this notice of addendum.

We declare no competing interests.

Editors of *The Lancet*

The Lancet, London EC2Y 5AS, UK

- 1 Calisher C, Carroll D, Colwell R, et al. Statement in support of the scientists, public health professionals, and medical professionals of China combatting COVID-19. *Lancet* 2020; **395**: e42–43.