



Ethnic inequalities in COVID-19

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Declarations of interest

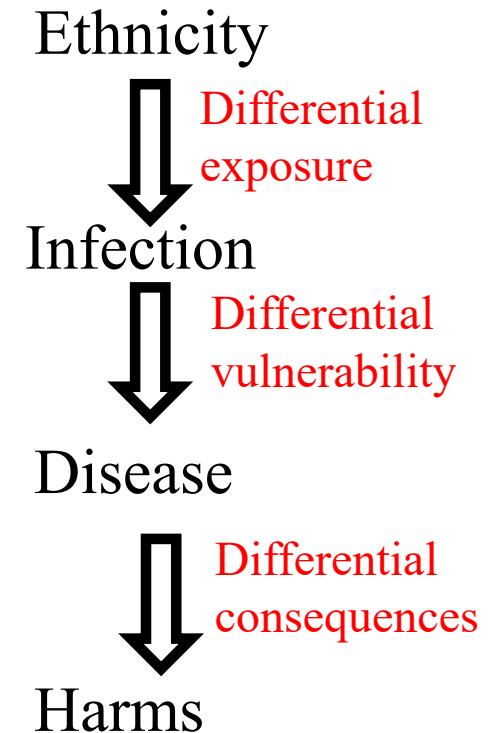
- Co-Chair of the Scottish Government's Expert Review Group on ethnicity and COVID-19
- Participant in the UK Government's Scientific Advisory Group on Emergencies (SAGE) and subgroup on ethnicity and COVID-19

NOTE THAT THIS PRESENTATION DOES NOT REFLECT THE VIEWS OF ANY OF THE ABOVE ORGANISATIONS AND REFLECTS MY VIEWS AS AN INDEPENDENT ACADEMIC

Outline

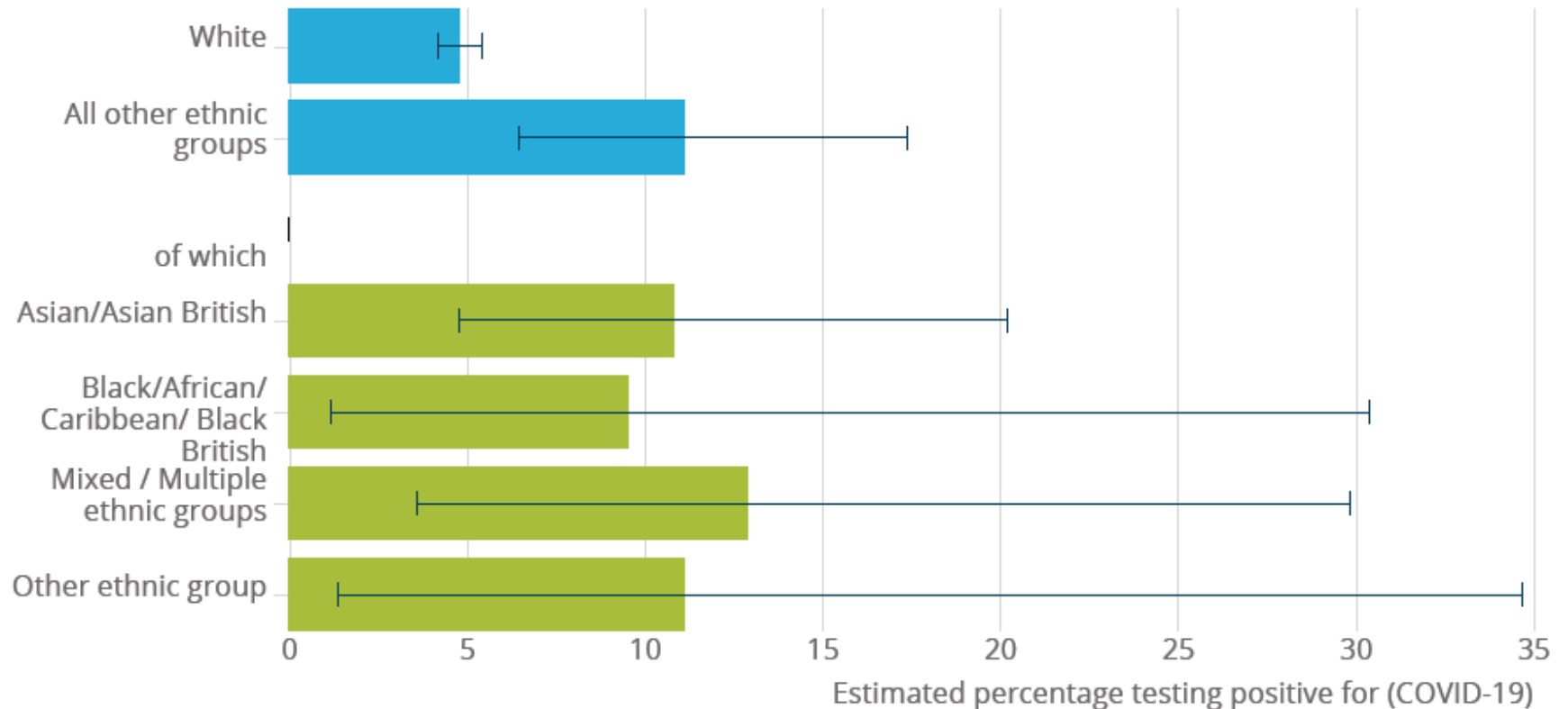
- Epidemiology
 - Systematic review and individual studies
 - Infection, Disease, Harms
- Understanding inequalities
 - Race vs Ethnicity
 - Causal diagrams
 - Conceptual framework

Why are ethnic minorities at greater risk of COVID-19 deaths?



Inspired by Diderichsen et al 2001. Work in progress: In collaboration with Ben Barr

Infection risk



Office for National Statistics. Coronavirus (COVID-19) Infection Survey: characteristics of people testing positive for COVID-19 in England, August 2020. London, 2020.

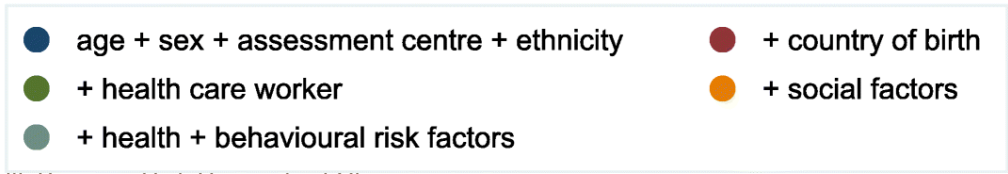
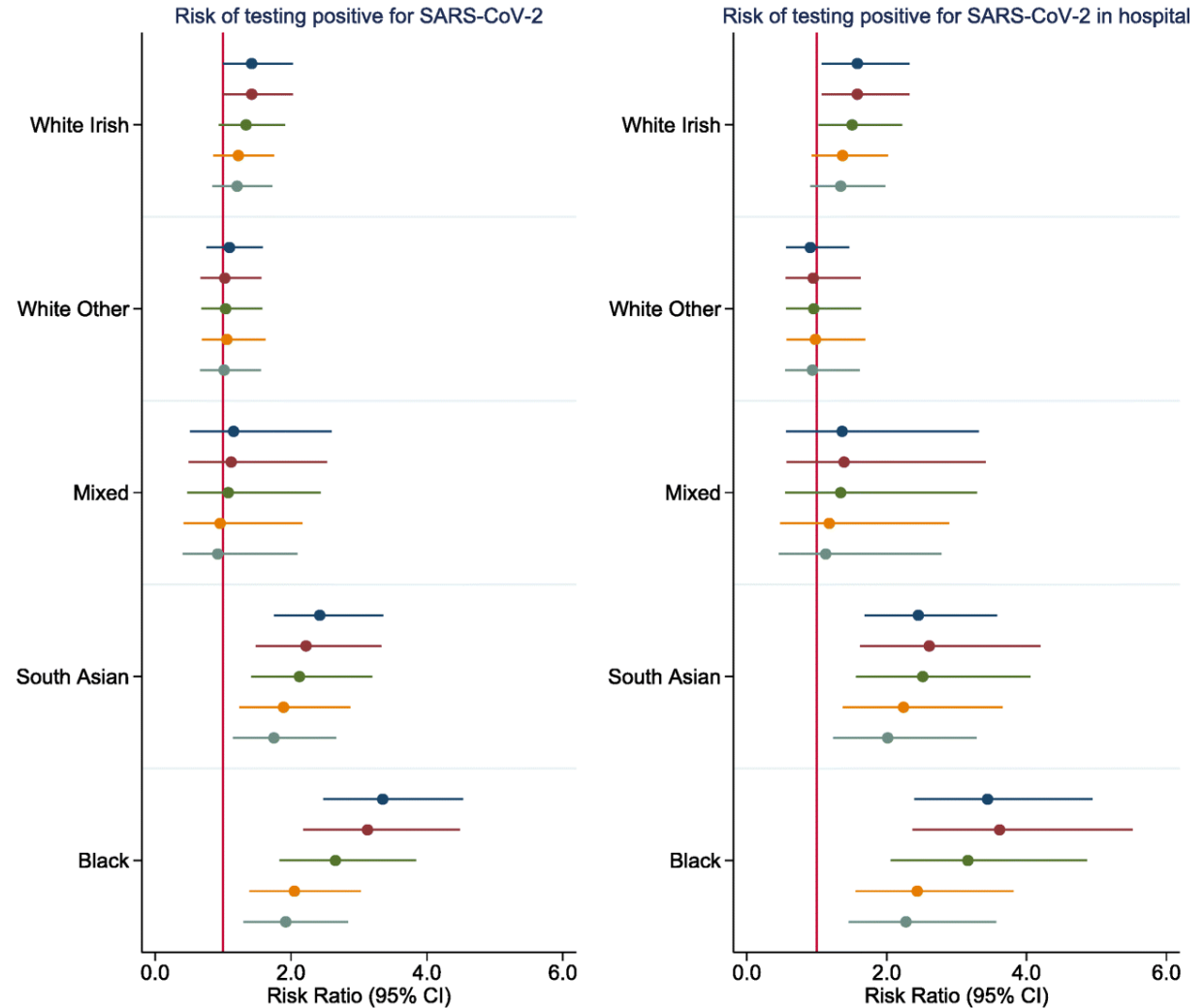
Disease risk in UK Biobank

- 392,116 participants in England
- Public Health England testing results (948 positive, with 726 hospital cases)
- Assess the relationship between ethnicity and COVID-19 infection
- To what extent are any inequalities accounted for by:
 - Age, sex and country of birth
 - Working in healthcare
 - Social differences
 - Pre-pandemic health conditions and behavioural risk factors

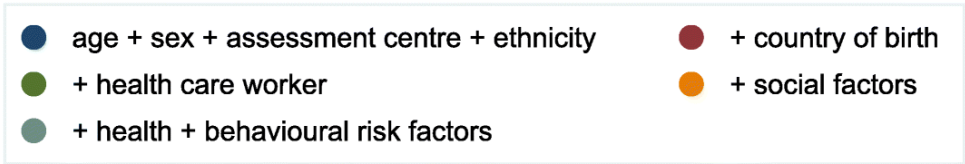
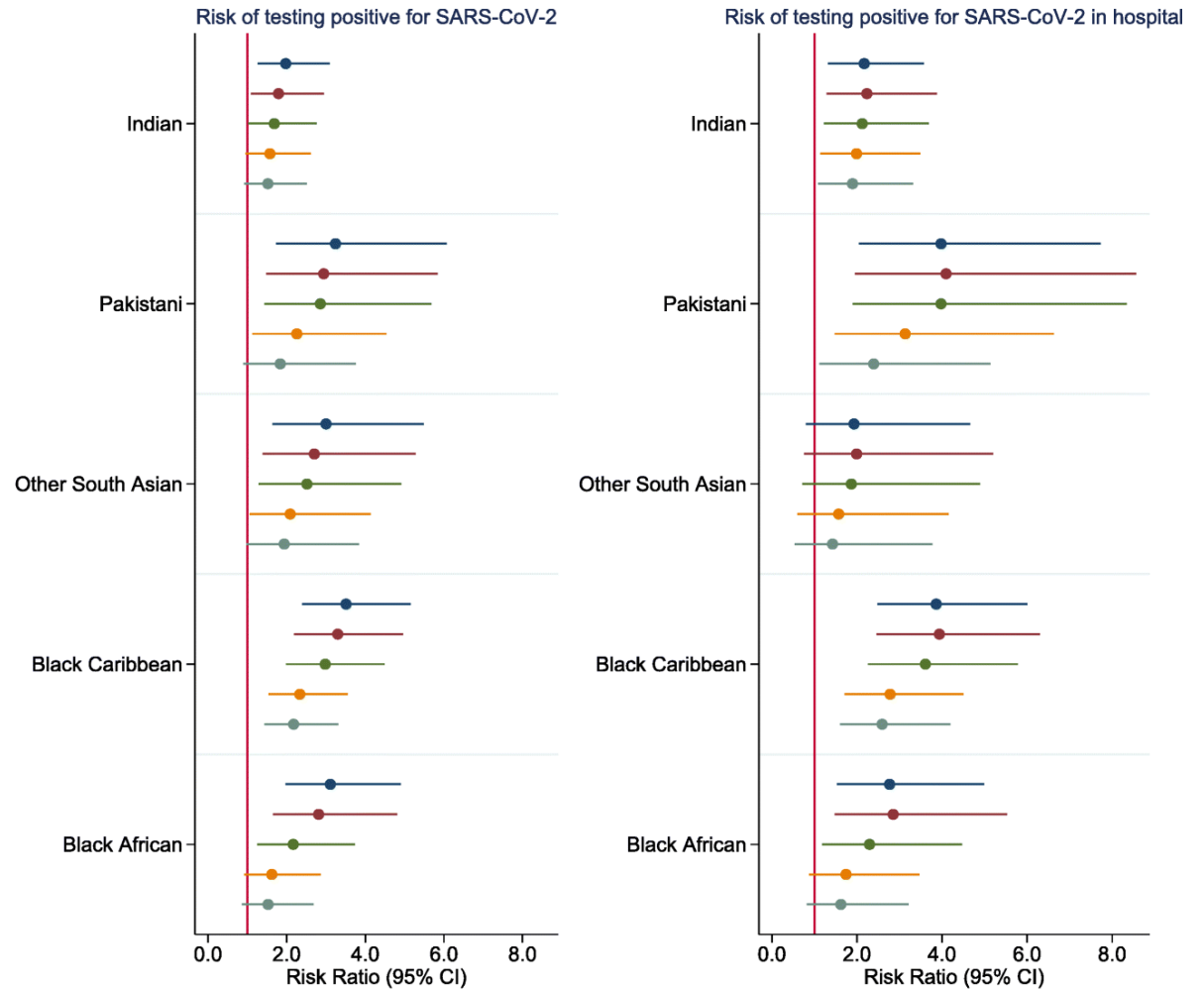
Niedzwiedz CL, O'Donnell CA, Jani BD, Demou E, Ho FK, Celis-Morales C, Nicholl BL, Mair FS, Welsh P, Sattar N, Pell JP, Katikireddi SV. "Ethnic and socioeconomic differences in SARS-CoV-2 infection: prospective cohort study using UK Biobank." *BMC Medicine* 18(1): 160.

Ethnicity

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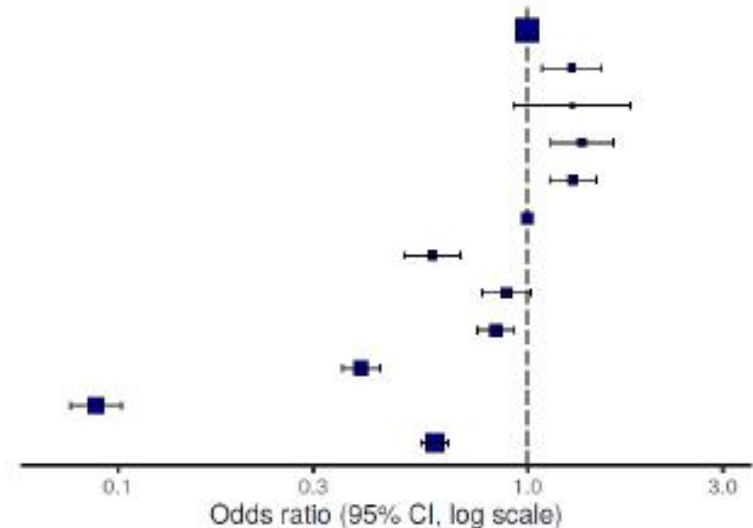
Ethnicity



Evidence of poorer outcomes

Critical care: hierarchical baseline

Ethnicity	White	-
	South Asian	1.28 (1.09-1.52, p=0.003)
	East Asian	1.29 (0.92-1.79, p=0.136)
	Black	1.36 (1.14-1.62, p=0.001)
	Other Ethnic Minority	1.29 (1.13-1.47, p<0.001)
Age on admission (years)	50-59	-
	18-39	0.58 (0.50-0.68, p<0.001)
	40-49	0.89 (0.78-1.01, p=0.080)
	60-69	0.84 (0.75-0.93, p=0.001)
	70-79	0.39 (0.35-0.44, p<0.001)
	80+	0.09 (0.08-0.10, p<0.001)
Sex at Birth	Female	0.59 (0.55-0.64, p<0.001)



Harrison EM, Docherty AB, Barr B, et al. Ethnicity and Outcomes from COVID-19: The ISARIC CCP-UK Prospective Observational Cohort Study of Hospitalised Patients. *SSRN preprint* 2020: Under review.

The concept of race

Draws on presumed **biological** differences

Generally based on **visible physical characteristics**

Very **limited scientific support** for concept of genetically distinct “races”

But the concept, and the term, are still widely used

- Particularly in the USA

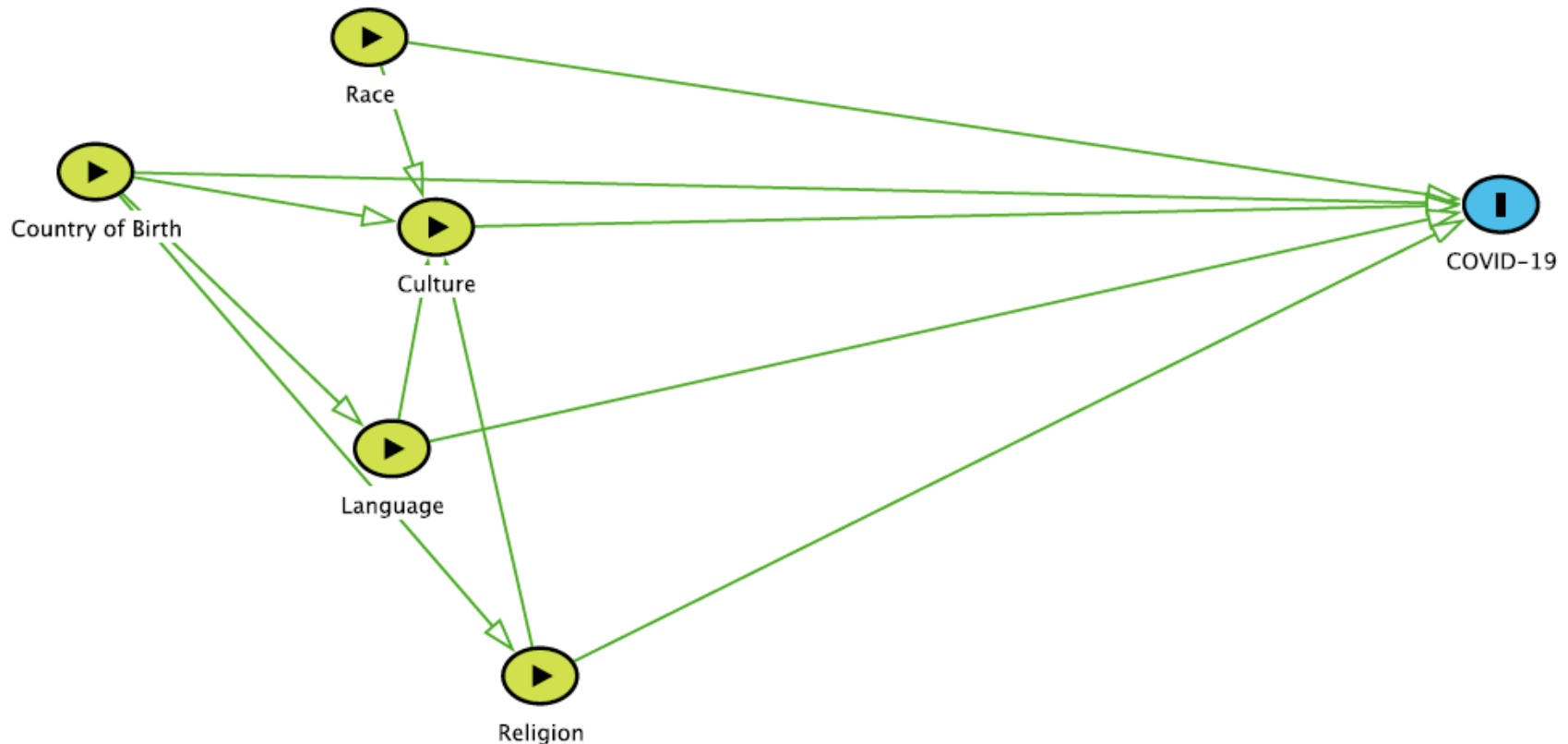
More modern understandings of concept do have more social focus and is relevant if studying impacts of racism

The concept of ethnicity

“The social **group** a person belongs to, and either **identifies with or is identified with by others**, as a result of a mix of **cultural and other factors** including **language, diet, religion, ancestry, and physical features** traditionally associated with race.” **Bhopal 2004**

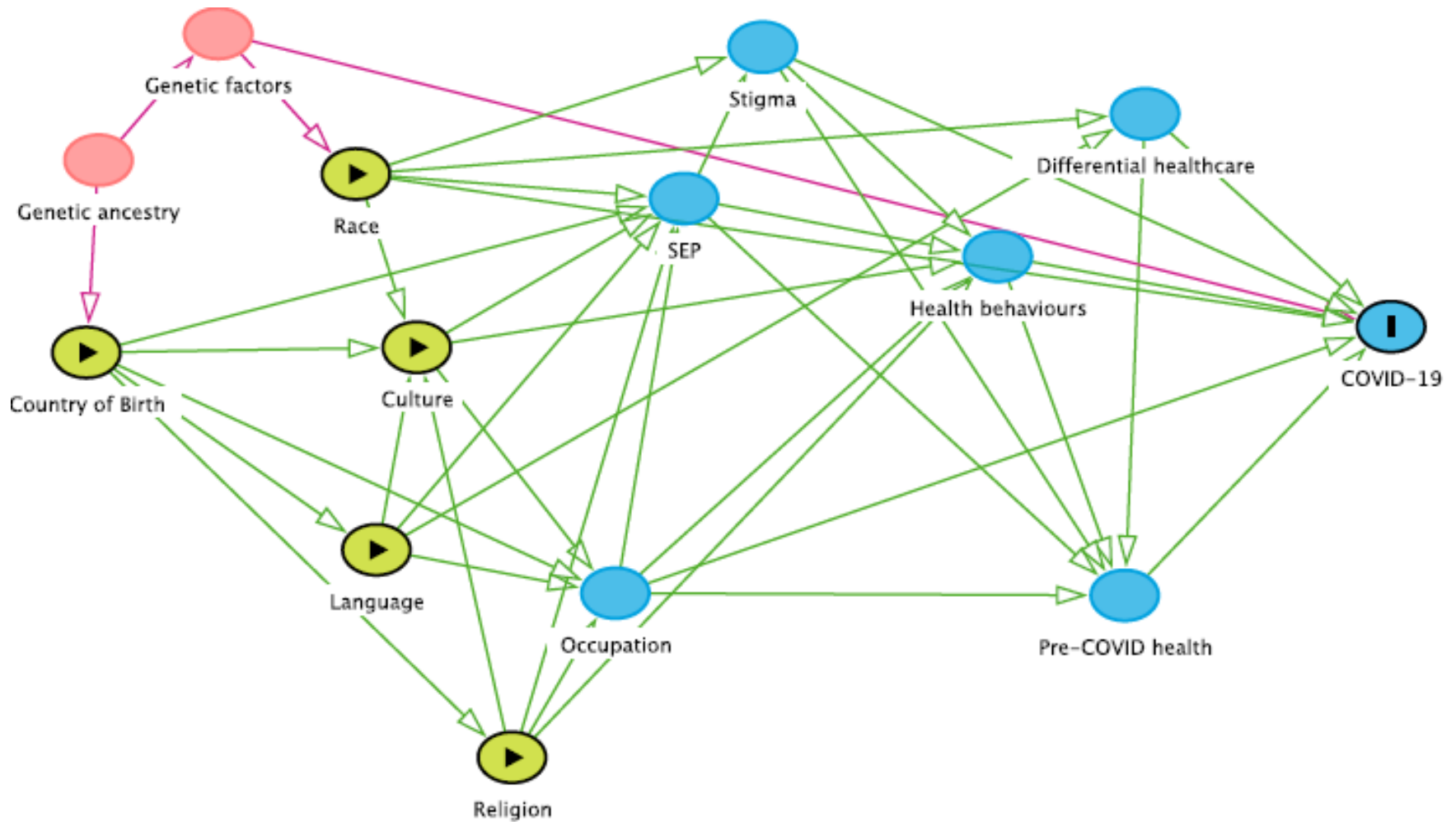
“An ethnic group is a **collectivity** within a larger population having real or putative common **ancestry**, memories of a shared past, and **a cultural focus** upon one or more symbolic elements which define the group’s identity, such as **kinship, religion, language, shared territory, nationality or physical appearance**. Members of an ethnic group are **conscious of belonging** to an ethnic group.” **Bulmer 1996**

Different dimensions of ethnicity

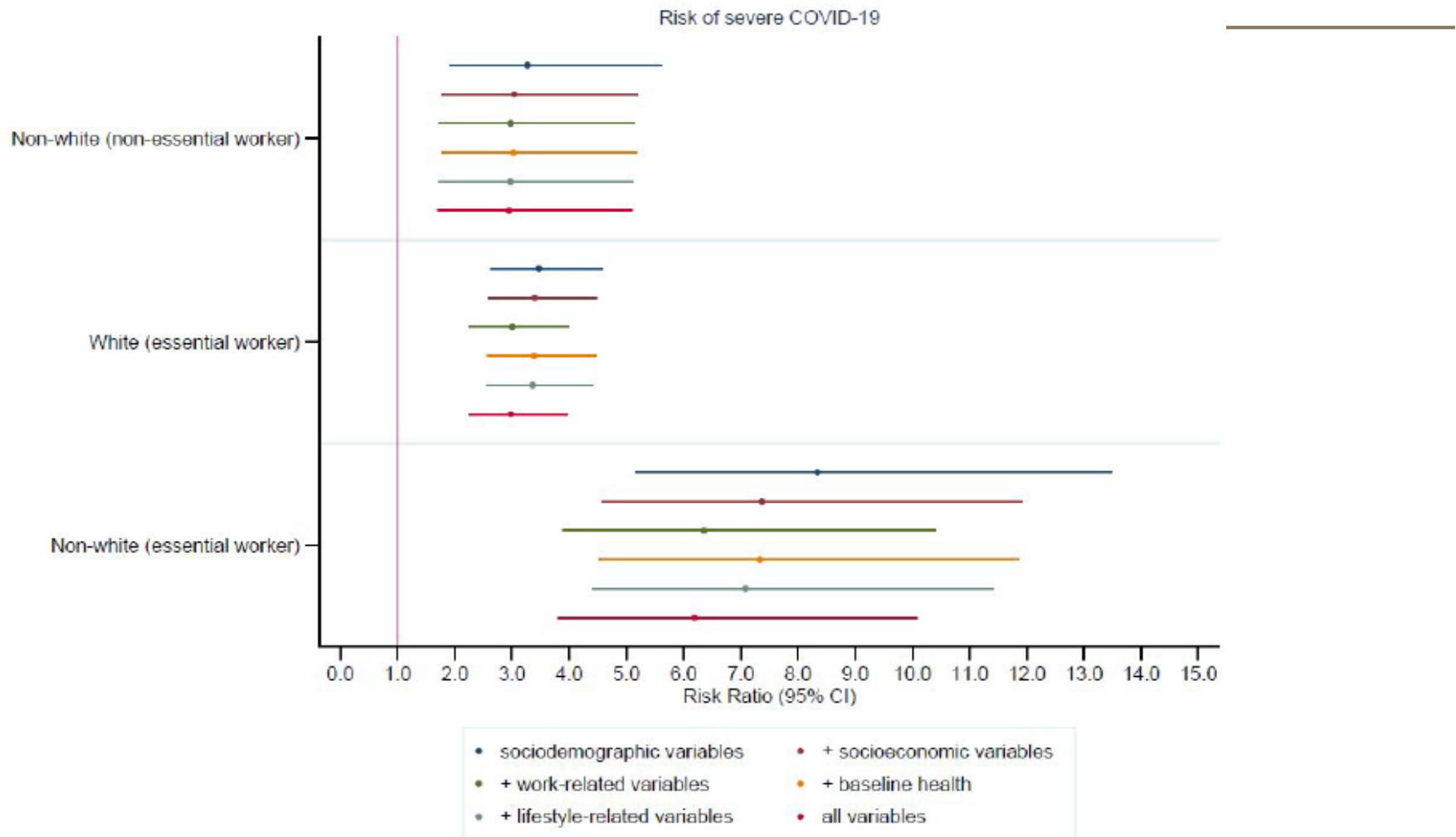


Ongoing work inspired by: VanderWeele TJ, Robinson WR. On causal interpretation of race in regressions adjusting for confounding and mediating variables. *Epidemiology (Cambridge, Mass)* 2014; **25**(4): 473.

Potential explanations



Possible that the effect of mediators may differ



Mutambudzi M, Niedzwiedz CL, Macdonald EB, et al. Occupation and risk of COVID-19: prospective cohort study of 120,621 UK Biobank participants. *medRxiv* 2020: 2020.05.22.20109892.

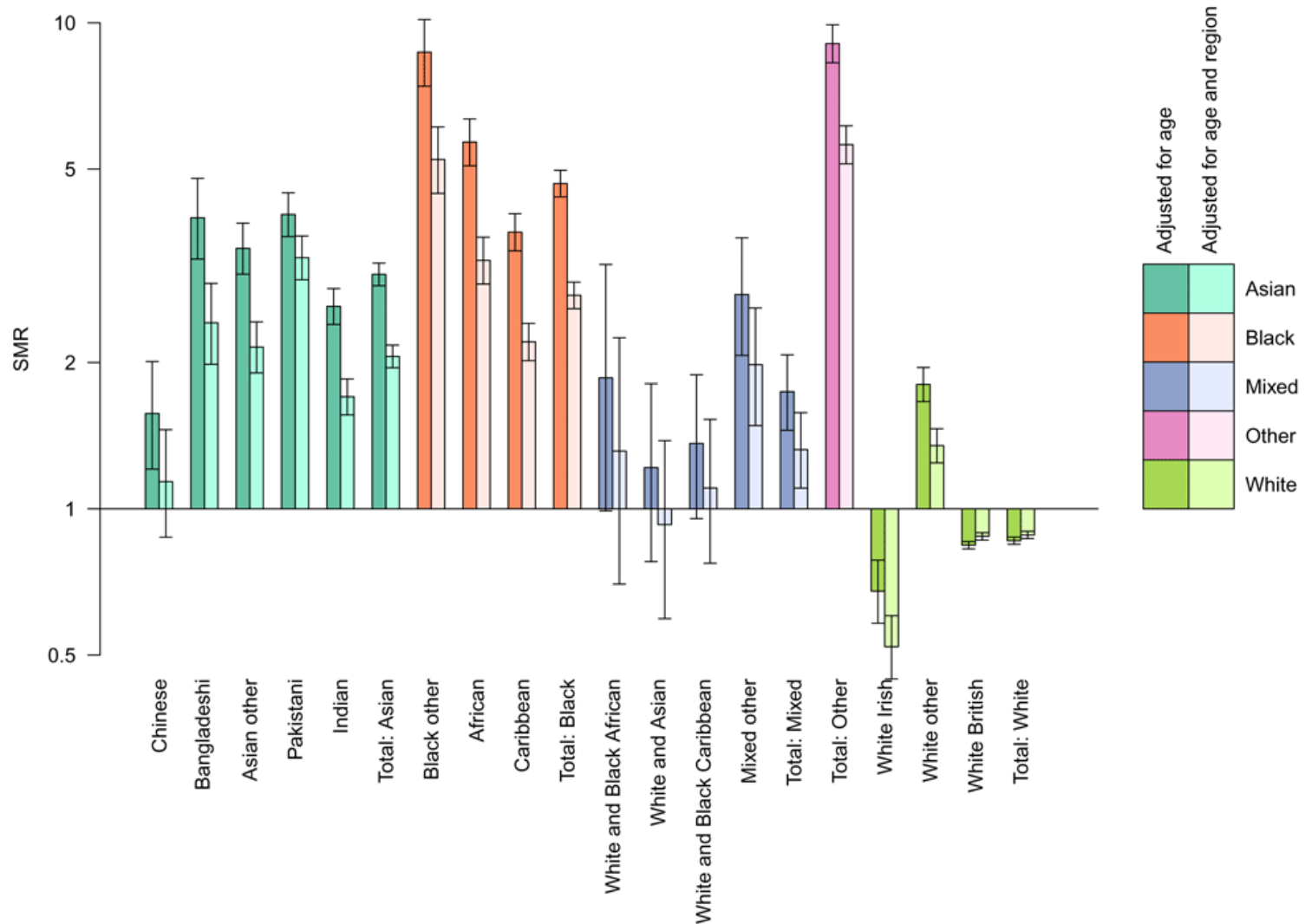
Conclusions

- Growing evidence of marked ethnic inequalities in COVID-19
- Increased risk of:
 - Infection
 - Disease (e.g. hospitalised)
 - Poorer prognosis (e.g. critical care admission)
 - Death
- No single explanation
- Social inequalities are likely to play a major role
 - Structural factors likely to underpin much of these risks
- Major differences across countries and between ethnic minority groups

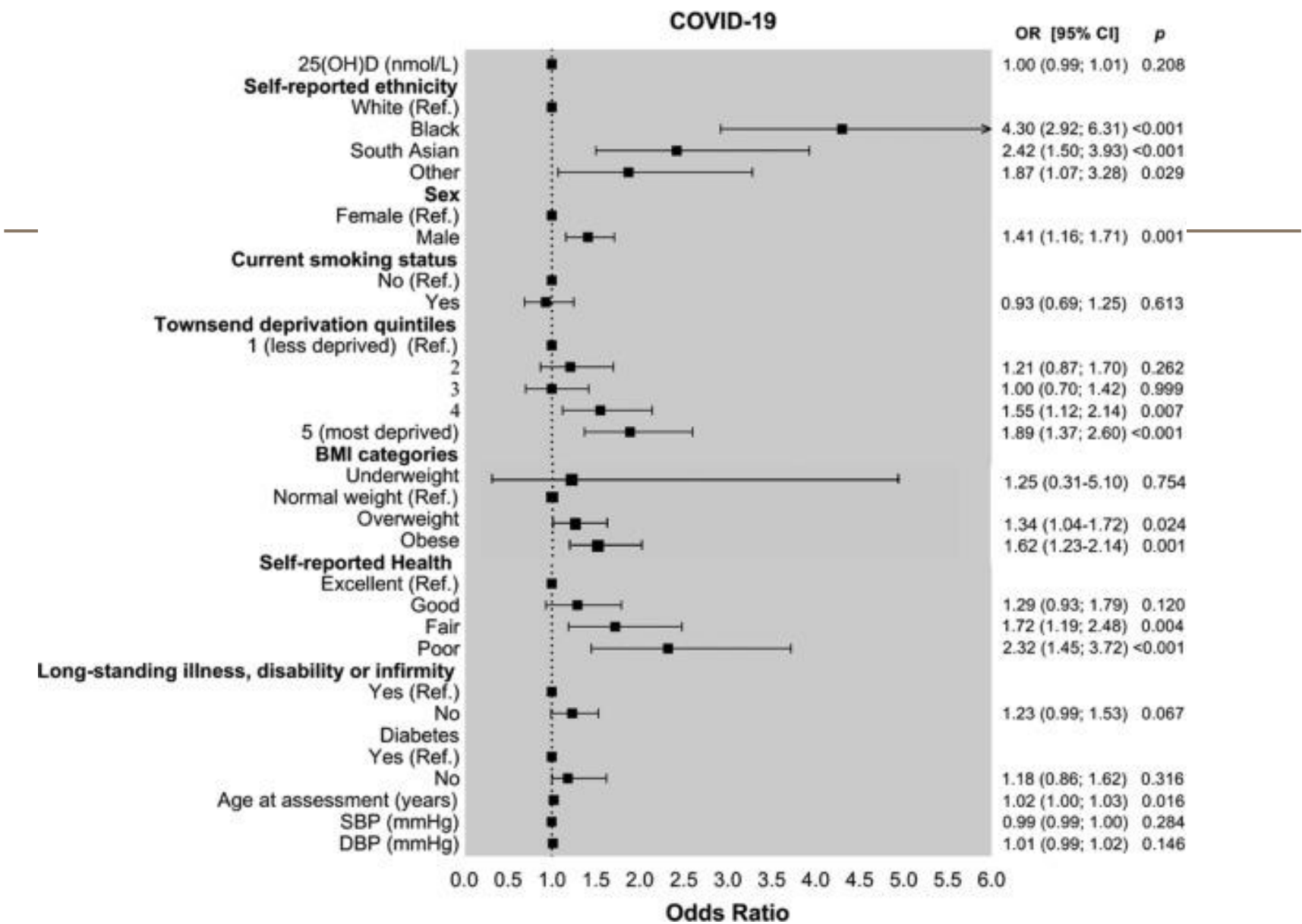
Funding

- NRS Senior Clinical Fellowship award: funded by NHS Research Scotland/Chief Scientist's Office/ Academy of Medical Sciences (SCAF/15/02)
- Medical Research Council: MRC_12017/13 & MRC_12017/15
- Chief Scientist Office: SPHSU13 & SPHSU15

Figure 1. NHS England COVID-19 deaths by ethnic group



Aldridge RW, Lewer D, Katikireddi SV et al. Black, Asian and Minority Ethnic groups in England are at increased risk of death from COVID-19: indirect standardisation of NHS mortality data [version 2]. Wellcome Open Res 2020, 5:88 (doi: 10.12688/wellcomeopenres.15922.2)



Hastie CE, Mackay DF, Ho F, et al. Vitamin D concentrations and COVID-19 infection in UK Biobank. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews* 2020; **14**(4): 561-5.

Responding to the challenge in Scotland

- Expert Reference Group to provide advice and challenge to SG response
- Co-chaired by Ima Jackson and me
- Membership includes academics, third sector and statutory bodies
- More information here:

<https://www.gov.scot/groups/expert-reference-group-on-covid-19-and-ethnicity/>

Ongoing systematic review

- To assess the epidemiological evidence on social factors that predict developing SARS-CoV-2 and the prognosis of COVID-19 disease in those affected
- Databases: LitCovid, Embase, BioRxiv, MedRxiv, Cochrane COVID-19 study register and targeted public health websites.
- Population: Any worldwide
- Exposures: PROGRESS Plus
- Comparator: Any different level of social exposure
- Outcomes: Infection or disease outcomes

Katikireddi SV, Wells V, Beale S, et al. An equity focused rapid review of the epidemiology of COVID-19. *PROSPERO database 2020*: CRD42020180724.