

Estimating the risk of post-COVID condition in deprived communities, migrants and ethnic minorities in England

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Background

- Deprived, migrant, and ethnic minority groups experienced disproportionate rates of SARS-CoV-2 infection, hospitalisation and mortality. (1)
- Socio-economic factors (e.g. household overcrowding, occupational exposures, and limited healthcare and vaccine access) contributed to these higher rates. (2)
- Non-UK-born ethnic minorities face unique risk factors and intersecting social determinants (e.g. cultural and language barriers) that may affect health outcomes. (3)
- Post-COVID Condition (PCC) risk may be higher in deprived areas, while evidence for ethnic minorities is mixed and limited for migrants. (4-7)

Aim

To investigate how **deprivation, migration status, and ethnic minority status** influence **PCC risk** in all participants regardless of infection status (Obj 1) and those with a confirmed SARS-CoV-2 infection (Obj 2)

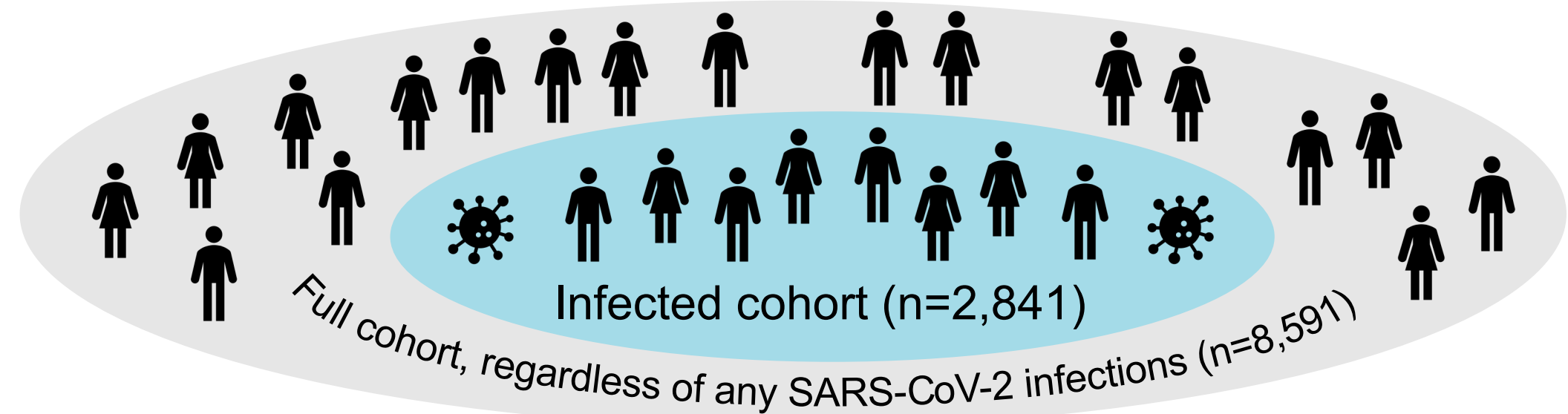
Methods

Study population: A subset of participants from the Virus Watch study, a prospective community cohort study in England and Wales, who are:

- living in England, and;
- answered ≥ 1 survey on persistent symptoms

Follow-up period: Feb 2020 – June 2022 (3 months post end of nationally-funded COVID-19 testing)

Analysis cohorts:



Exposures:

Index of Multiple Deprivation (IMD) quintiles
1st (most deprived) - 5th (least deprived)

Migration status
UK born/
Not UK born (migrant)

Ethnic minority status
White British/
Ethnic minority

Outcome: PCC (yes/no) defined using the WHO definition*
*Symptoms lasting ≥ 2 months within 3 months of SARS-CoV-2 infection onset, unexplained by other diagnoses

Statistical analyses: Multivariable logistic regression analyses for each exposure and cohort, stratified by sex and variant period (Pre-Omicron/Omicron) with results presented as predicted probabilities of developing PCC

Exposure	Objective 1 Adjustment set	Objective 2 Adjustment set
IMD quintiles	Age, Migration status, Ethnic minority status, Occupation	Age, Migration status, Ethnic minority status
Migration status	Age, Ethnic minority status	Age, Ethnic minority status
Ethnic minority status	Age	Age

References

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Results

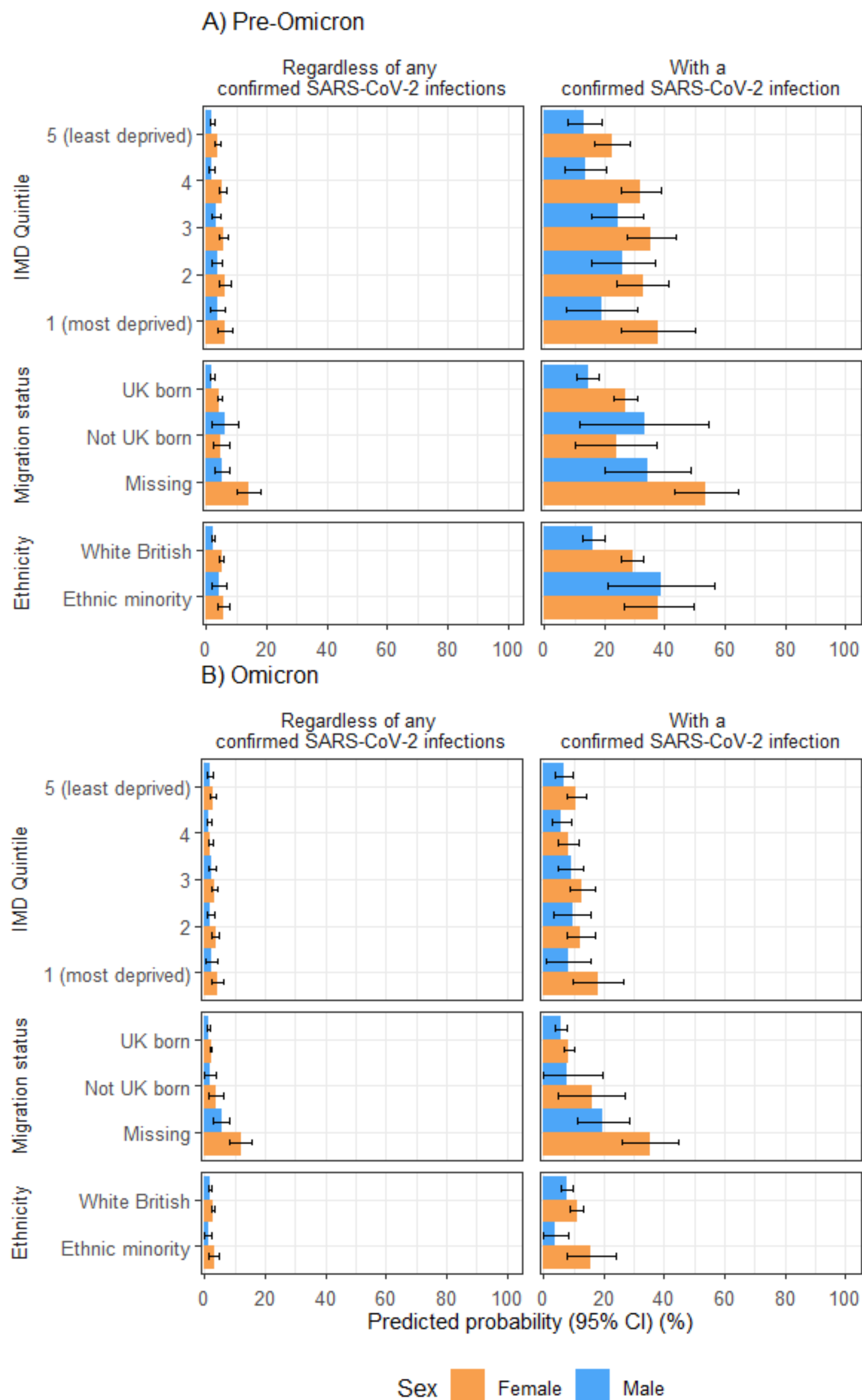


Figure 1. Predicted probabilities of PCC by IMD quintiles, migration status and ethnic minority status in the full and infected cohorts, categorised by reported sex-at-birth during A) pre-Omicron and B) Omicron periods. Pre-Omicron period: 1 Feb 2020 – 13 Dec 2021; Omicron period: 14 Dec 2021 – 12 Jun 2021

IMD Quintiles

- Pre-Omicron:** Increasing probability with deprivation levels, especially in females, in both cohorts
- Omicron:** No between-quintile differences for either sex in both cohorts

Migration status

- Pre-Omicron:** Higher probability in migrant than UK-born males in the full cohort (6.3%, 95%CI 1.8-10.8 vs. 1.9%, 1.4-2.4)
- Omicron:** Higher point estimates for migrant than UK-born individuals in both cohorts, but no clear difference

Ethnic minority status

- Pre-Omicron:** Higher likelihood in ethnic minority than White British males in both cohorts
- Omicron:** Higher probabilities in ethnic minority females and White British males than their counterparts in the infected cohort, but no clear differences between groups

Ethnic minority status x Migration status

- Pre-Omicron:** Higher probability in ethnic minority migrants males (49.7%, 26.4-73.1) than White British UK-born males (13.7%, 9.9-17.4) in the infected cohort
- Omicron:** Higher likelihood in ethnic minority migrants females than White British UK-born females in the infected cohort

Conclusion

- Disparities in PCC likelihood were influenced by **pre- and post-infection determinants**, such as insecure/frontline jobs and healthcare access barriers (e.g. cultural/language barriers)
- Pre-Omicron to Omicron PCC likelihood changes may reflect **intervention-induced inequalities**.
- Further research should explore **the intersection of migration, ethnicity, and deprivation** to guide targeted public health strategies.
- Policies should address occupational and housing exposure risks, provide culturally appropriate public health information, and ensure equitable access to PCC and primary care services.

