Global SARS-CoV-2 seroprevalence from January 2020 to June 2022: A systematic review and meta-analysis of standardized population-based studies

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Introduction

- SARS-CoV-2 seroprevalence studies estimate prevalence of infection- or vaccination-derived serum antibodies
- WHO Unity Studies¹ is a global sero-epidemiological standardization initiative. The Unity population-based **seroprevalence protocol**² was implemented globally, particularly supporting robust data production in resource scarce settings
- **Objective:** meta-analysis of studies aligned with the WHO Unity protocol to provide robust and representative estimates of SARS-CoV-2 seroprevalence globally and regionally

Methods

- We searched for sero-surveys globally^{3,4}:
 - aligned with the WHO 'Unity' Studies protocol²
 - between 01-01-2020 and 30-12-2022
 - in Medline, Embase, Web of Science, Europe PMC (preprints), grey literature, and media
 - yet unpublished data, through the WHO Unity studies initiative, were also incorporated

1. Seroprevalence over time: Meta-analysis and population weighting to estimate seroprevalence over time by WHO region

2. Case ascertainment: Comparison of infection-induced seroprevalence with confirmed cases to estimate case ascertainment

3. Seroprevalence by demographics: Meta-analysis of differences in seroprevalence between groups

Results

- We synthesized 1,150 studies from 105 different countries in the analysis
 - Many studies were from the WHO Europe region and Americas regions (n=405, 35% and 483, 42% respectivelv)
 - Many studies from LMICs (n=389, 34%)



- Lower in age 0-9 vs 20-29
- Lower in age 60+ vs 20-29





World Health **Organization** COVID-19 IMMUNITY

AMR HIC 1.8:1

Lowest

Figure 3. Considerable underascertainment globally; notable variation by WHO region

Global estimate – 10.5:1

SEAR 38:1 WPR 3:1

EUR LIC 12:1 EUR HIC 1.9:1 EMR 59:1

Conclusions

- Most comprehensive and geographically representative analysis of seroprevalence data in the general population to date
 - enabled through the **standardization** and **equity principles** of the WHO Unity Studies¹
- Seroprevalence varies significantly by region,
 - reflecting variation in PHSM, infection, vaccination
- Substantial case underascertainment detected.
 - varving considerably by region, case data quality
 - reinforcing need for serosurveillance in data-scarce **regions**, especially LMICs
- 2021 rapid increases in seroprevalence reflect vaccination rates in HIC and transmission in LMIC,
 - emphasizing importance of equity in global vaccine distribution + maintaining PHSM where needed

References

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