



COVID-19 information note 24

High seroprevalence of SARS-CoV-2 in Somalia: understanding the true burden of COVID-19

The need to determine the seroprevalence of SARS-CoV-2 in Somalia

Ever since Somalia reported its first case of coronavirus disease 2019 (COVID-19) on 16 March 2020, it was generally thought that the country's fragile health system would be overwhelmed. At that time, the country had no intensive care unit beds, no ventilators and no central supply of high-grade medical oxygen in the public sector for a population of more than 15 million. In addition, Somalia's health system was ranked 193 out of 195 in the Global Health Security Index and the second most fragile in the world.

Somalia still does not have reliable estimates of the total number of COVID-19 cases and deaths in the country, which is similar to many other African countries. It has not reported a high number of cases or deaths in spite of difficulties in planning and implementing public health measures, such as social distancing or lockdowns, and the limited capacity for testing. As of 23 April 2023, the country had reported 27 300 cases of COVID-19 and 1352 deaths.

Many reasons have been proposed for the mismatch between expectations and reality with COVID-19 in Somalia, including: the young demographic; poor testing capacity; absence of systematic surveillance or testing; stigma related to sickness preventing people from attending health facilities; milder symptoms; or other population features that could affect disease severity and outcomes.

COVID-19 surveillance in Somalia mostly focuses on symptomatic patients attending health care

Highlights

- In 2021, Somalia conducted its first population-based prevalence survey of the virus causing COVID-19 – SARS-CoV-2. The results are now published in a peer-reviewed medical journal. The study provides national seroprevalence estimates for SARS-CoV-2 infection in Somalia, standardized for the general population, as described in the WHO Unity Studies protocols
- The overall seroprevalence of SARS-CoV-2 in the country was 56.4%. This means that by July 2021 more than half of the population of the country had been infected by SARS-CoV-2, representing an estimated 8.46 million infections since the first case of COVID-19 was reported in the country on 16 March 2020.
- This high seroprevalence SARS-CoV-2 in the Somali population indicates that many infections have not been captured by the country's surveillance system, resulting in considerable under-reporting.
- Although the high SARS-CoV-2 seroprevalence suggests potentially greater protection against severe COVID-19 than indicated by official case counts of COVID-19, there is no consensus that antibody presence correlates with protection against SARS-CoV-2 infection.
- Thus, many Somali people remain susceptible to SARS-CoV-2 infection. As such, continued monitoring of SARS-CoV-2 in vulnerable populations is warranted.

facilities or contacting hotline numbers. Such case reporting may underestimate the true burden of COVID-19 in Somalia. As reported in COVID-19 information note 12¹, the World Health Organization (WHO) supported the health ministries of the Federal Government of Somalia and of Somaliland in conducting a population-based, age-stratified seroepidemiological investigation of the virus causing COVID-19, i.e. severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The study design followed the protocol of WHO UNITY studies. The study aimed to: (i) provide estimates of the prevalence of antibodies to SARS-CoV-2 (seropositivity rate) in serum in different age groups; (ii) determine the cumulative population immunity; and (iii) estimate the fraction of asymptomatic infection in the population.

This study was conducted from March to July 2021 and included 2751 participants selected from individuals attending outpatient and inpatient departments of public health facilities, or their accompanying family members. Participants were interviewed to collect sociodemographic data and provided a blood sample. The seropositivity rates overall and by sex, age group, state, residence, education and marital status were estimated. Sociodemographic factors associated with seropositivity were also assessed. The full study was published in the *Journal of Infection and Public Health* in April 2023 and can be accessed at: <https://doi.org/10.1016/j.jiph.2023.04.016>

More than half the population positive for SARS-CoV-2 with variations by sociodemographic characteristics

The unweighted seroprevalence of SARS-CoV-2 infection in the population was 56.4% (95% confidence intervals: 54.5–58.3%) (Table 1). The seropositivity was significantly higher in males, older age groups, those with higher education and urban residents, but seropositivity did not vary by sex. Seropositivity also differed significantly by state of residence (Figure 1), with residents of Banadir having the highest seropositivity rate compared with other states.

However, in the logistic regression analysis to control for confounding factors (variables that influence both the seropositivity and sociodemographic characteristics, causing false associations), only education and residence remained significant predictors of seropositivity. University-educated participants were 1.73 times more likely to have tested positive for SARS-CoV-2 than those who were illiterate, and urban residents were 1.65 times more likely to be positive than rural and other residents. In addition, residents in Somaliland and South West state were significantly less likely

to have tested positive for SARS-CoV-2 than residents in Banadir (16% and 46% less likely, respectively).

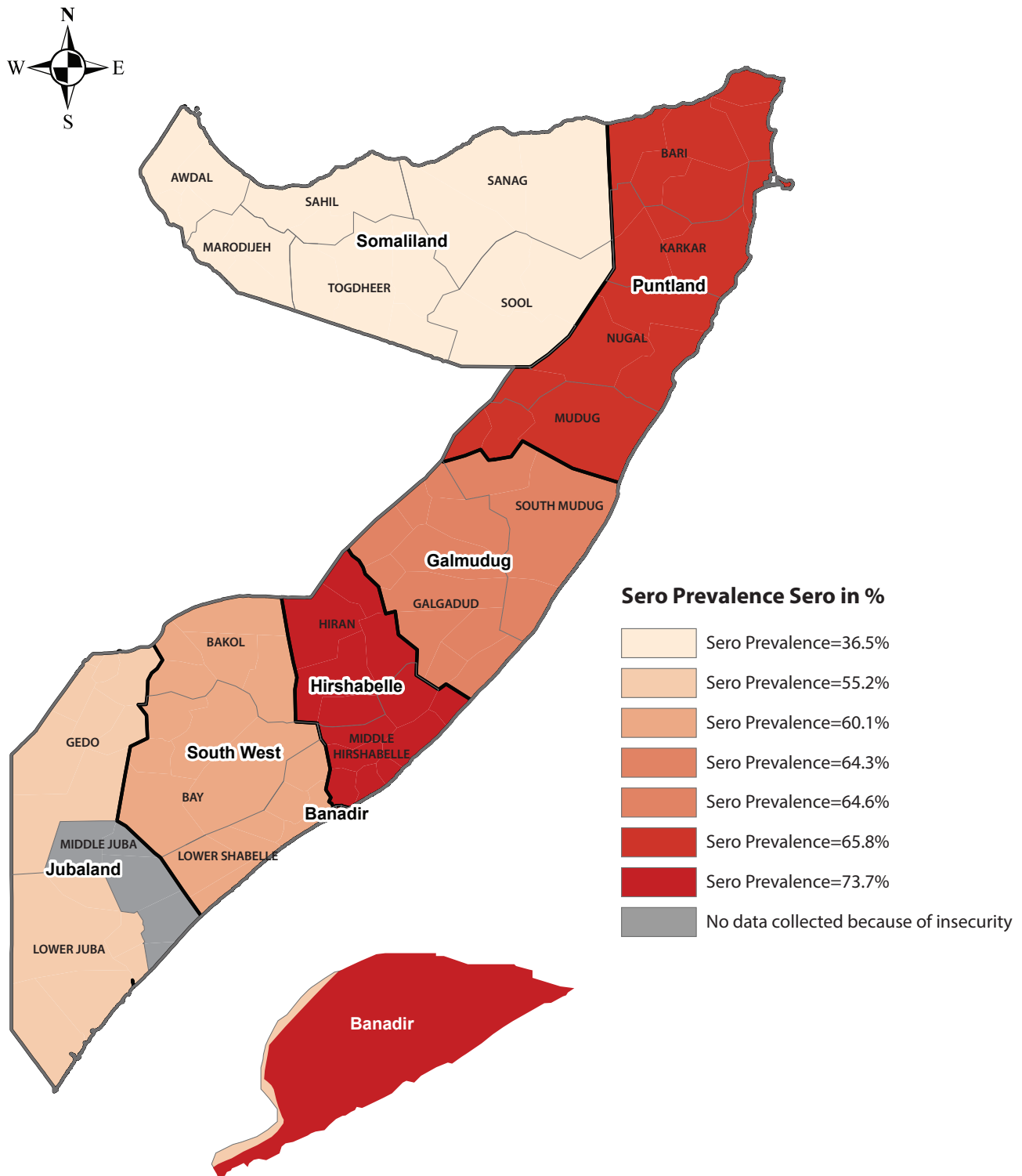
Table 1. Unweighted seroprevalence of SARS-CoV-2 infection, by sociodemographic characteristic, Somalia, 2021

Characteristic	Unweighted seroprevalence, % (95% CI)	P-value
Overall (n = 2597)	56.4 (54.5–58.3)	–
Sex (n = 2597)		0.007*
Female	53.7 (51.0–56.5)	
Male	58.9 (56.3–61.6)	
Age group, years (n = 2295)		< 0.001*
1–4	45.8 (40.3–51.4)	
5–9	50.0 (44.0–56.0)	
10–19	58.2 (54.3–62.2)	
20–29	63.4 (58.9–67.8)	
30–39	65.5 (59.9–71.1)	
40–49	67.2 (58.7–75.8)	
≥ 50	67.2 (58.7–75.8)	
Marital status (n = 1442)		0.223
Married	61.6 (58.5–64.7)	
Single	58.3 (54.0–62.6)	
Education (n = 1442)		< 0.001*
Illiterate	51.5 (45.8–57.2)	
Primary	61.7 (55.3–68.0)	
Quran	55.1 (48.6–61.5)	
Secondary	58.5 (52.8–64.2)	
University	71.0 (66.6–75.4)	
Residence (n = 2597)		< 0.001*
Camp for internally displaced people	52.0 (40.7–63.3)	
Nomadic	46.3 (33.0–59.6)	
Rural	45.0 (38.5–51.6)	
Urban	57.9 (55.8–59.9)	
State (n = 2597)		< 0.001*
Banadir	73.7 (69.4–78.0)	
Galmudug	64.3 (57.4–71.2)	
Hirshabelle	65.8 (60.2–71.4)	
Jubbaland	55.2 (48.8–61.6)	
Puntland	64.6 (59.5–69.6)	
Somaliland	36.3 (32.9–39.8)	
South West	60.1 (55.3–64.9)	

SARS-CoV-2: severe acute respiratory syndrome coronavirus 2.
* Statistically significant at P < 0.05.

¹ A key COVID-19 lesson: context-specific health research, policies and practices are needed
<https://www.emro.who.int/images/stories/somalia/documents/covid-19-information-note-12.pdf?ua=1>

Figure 1. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) seropositivity, by state, Somalia, 2021



Mismatch between SARS-CoV-2 seroprevalence and recorded COVID-19 cases

The study findings indicated that by July 2021 more than half of the population (56.4%) had been exposed to SARS-CoV-2 infection in Somalia representing 8.46 million infections since the first case of COVID-19 was reported in the country. However, only 8.8% of the participants enrolled in the study reported having been laboratory-diagnosed with COVID-19.

This finding suggests that official data on the number of laboratory-confirmed COVID-19 cases in Somalia are a gross underestimate of the extent of community transmission of SARS-CoV-2 in the country, a result that mirrors those in other seroprevalence studies in Africa and worldwide. A plausible explanation for the discrepancy between official numbers and infections measured by our survey is the high prevalence of asymptomatic infections. The relatively young age of African populations may have resulted in more asymptomatic cases. As Somalia's testing strategies mostly focused on patients who were symptomatic and presented to health facilities, it is likely that most people with asymptomatic infections or mild infections did not visit health facilities and were hence missed in the official count of cases.

The study concluded that the high seropositivity rate for SARS-CoV-2 in Somalia represents a high rate of either natural or latent infection and is not attributable to vaccination. At the time the study was conducted, only 0.8% of the Somali population had received one dose of the COVID-19 vaccine and no one was fully vaccinated. Therefore, the high seroprevalence observed is an indication of the extensive spread of infection in Somalia.

High seropositivity does not mean protection: continued monitoring of SARS-CoV-2 circulation is needed

The study findings show a high seroprevalence of SARS-CoV-2 in the Somali population, possibly due to natural infection as COVID-19 vaccination coverage during

the study was low. Although the high SARS-CoV-2 seroprevalence suggests greater population exposure and potential protection against severe COVID-19 than previously indicated by official case counts, there is no consensus on antibody-based correlates of protection against SARS-CoV-2 infection. As such, the presence of antibodies is less indicative of level of protection against SARS-CoV-2 infection. Furthermore, this type of immunity may induce lower anti-spike neutralizing and binding antibody responses than vaccination immunity. In addition, variations in SARS-CoV-2 seroprevalence were seen between geographic regions, which suggests that much of the Somali population remains susceptible to SARS-CoV-2 infection.

Therefore, vaccination strategies and other public health measures should be maintained and should target susceptible areas and age groups.

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Country Office in Mogadishu, Somalia

Correspondence: +252616695096;

Email: emacosomwr@who.int; emacosomexr@who.int

URL: <http://www.emro.who.int/countries/somalia/index.html>



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