Seroprevalence of SARS-CoV-2 antibodies in the general population of Bamako, Mali, and factors associated with infection: a population-based cross-sectional study

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Abstract

Background: The seroepidemiological characteristics of SARS-CoV-2 infection in Mali are not yet well understood. This study assessed SARS-CoV-2 antibody seroprevalence and factors associated with infection in the general population of Bamako, the capital city and epicenter of COVID-19, to determine the magnitude of the pandemic and contribute to control strategies improvement in Mali. Methods: A cross-sectional survey was conducted in September 2022 to collect data on sociodemographic information, clinical characteristics, comorbid factors, and blood samples. ELISA was performed to determine anti-Spike (S) and anti-RBD antibody levels, and RT-PCR to confirm SARS-CoV-2 infection in oropharyngeal swabs. A total of 3601 participants were enrolled in RedCap. Result: the mean age of participants was 33.5±15.9 years old; the sex ratio female: male was 3.6:1. The most representative were the 20–29 (28.9%, n=1043) and the 30–39 (26.9%, n=967) years-old. The COVID-19 vaccine coverage among the participants was 35.8%, with vaccines from Covidshield AstraZeneca (AZ, 13.4%), Johnson and Johnson (J&J, 16.7%), Sinovac (3.9%), and BioNTech Pfizer (1.8%). Overall, S protein and RBD antibodies seroprevalence was remarkably high in the general population (98% and 97%, respectively). Factors such as youth (1–9 years old) and male sex were associated with lower antibody responses against S and RBD, whereas previous exposure to patients with COVID-19 and receiving the COVID-19 vaccine were associated with increased odds of antibody responses. Conclusion: This serosurvey demonstrated the high seroprevalence of SARS-CoV-2 antibodies and highlighted the factors that may influence antibody responses, clearly underlining an underestimation of the pandemic in Mali.

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