

# Retrospective mortality and COVID seroprevalence during the pandemic in three African settings: in Cameroon and in the cities of Abidjan and Lubumbashi

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## Background

Seroprevalence and mortality estimates are necessary to understand the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) context and to guide public health decisions. Using representative samples of the general population, we evaluated retrospective mortality and seroprevalence of anti-SARS-CoV-2 antibodies more than 1 year after the first confirmed COVID cases in Cameroon, Abidjan (Côte d'Ivoire) and Lubumbashi (Democratic Republic of the Congo).

## Methods

The studies included retrospective mortality surveys using two-stage cluster sampling methodology for random selection of households based on random geo-points and nested anti-SARS-CoV-2 antibody prevalence surveys. The surveys took place in April-May (Lubumbashi), July-August (Cameroon) and July-November (Abidjan) 2021. Crude mortality rates were stratified between baseline and follow-up (pandemic) periods and further investigated by age group and individual COVID waves. In select households, participants were tested for anti-SARS-CoV-2 antibodies by rapid serologic testing (RST) and laboratory-based testing. Seroprevalence was estimated overall and excluding participants who self-reported vaccination.

## Results

In two (Cameroon and Lubumbashi) of three settings, mortality rates increased significantly during the pandemic period overall and across several age groups, including older populations. In Abidjan, an increase was observed during the third wave. Overall, 15.7% (43.2%), 11.3% (18.3%) and 35.6% (79.4%) individuals tested positive by RST (laboratory-based testing) in Lubumbashi, Cameroon, and Abidjan, respectively. Among those unvaccinated, 9.5% (16.9%) and 28.3% (77.8%)

individuals tested positive by RST (laboratory-based testing) in Cameroon and Abidjan, respectively. Seroprevalence estimates generally increased with age, regardless of vaccination status.

## Conclusion

Seroprevalence estimates were tens (Cameroon and Abidjan) to hundreds (Lubumbashi) of times higher than attack rates reported by the respective surveillance systems. A significant increase in mortality was observed in some settings during the pandemic period. While overall mortality rates were below emergency thresholds, older populations were among the most affected. In certain settings, targeted vaccination strategies may be appropriate.

In three African contexts, we describe varying degrees of circulation of the virus and settings with increased mortality since the start of the pandemic.

