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SARS-CoV-2 Genomic Variation - African perspective

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Data acquisition

A total of 924 available SARS-CoV-2 genomic sequences in the Global Initiative on Sharing All Influenza Data (GISAID) database as of September 2, 2020, filtered as "high coverage only, *Homo sapiens*, complete, all clades and low coverage excl", with patient's status, Africa were mined from the GISAID web interface (<https://www.epicov.org/epi3/frontend>) and analyzed. The patient's age of all the sequences was also obtained to determine the age distribution of the infected patients.

Country data of the number of confirmed cases, recoveries, reported deaths due to COVID-19 were obtained from Worldometer (<https://www.worldometers.info/coronavirus/>) and WHO database (covid19.who.int). The number of tests done per country and each nation's population was obtained from worldometer database. The age distribution of countries with the highest prevalence of COVID-19 cases was obtained from the World Factbook (<https://www.cia.gov/library/publications/the-world-factbook/>).

Sequence and mutational analysis

In this study, the mined 924 SARS-CoV-2 viral sequences were used to analyze the genomic variability since the index case of the COVID-19 pandemic in Africa in February 2020 to identify the frequency and spread of mutations in the African population. The evolution of the COVID-19 outbreak with respect to the transmission in the mutational hotspots was assessed and evaluated on the GISAID web interface (<https://www.epicov.org/epi3/frontend>). Recurrent mutations observed were focused on as they are likely to confer viral-host structure-function relationship promoting higher transmission rate.

Determination of Testing, Fatality and Recovery Rate

The testing rate was determined for each African country as a percentage of the total test done from the country's population. The fatality rate was determined as a percentage of total reported deaths due to COVID-19 from each country's number of confirmed cases. The recovery rate was determined as a percentage of the number of infectious patients who recovered from all reported confirmed cases in each country.