COVID-19 changing the face of the world. Can sub-Sahara Africa cope?

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Abstract
We formulate a mathematical model for the spread of the coronavirus which incorporates adherence to disease prevention. The major results of this study are: First, we determined optimal infection coefficients such that high levels of coronavirus transmission are prevented. Secondly, we have found that there exists several optimal pairs of removal rates, from the general population of asymptomatic and symptomatic infectives respectively that can protect hospital bed capacity and flatten the hospital admission curve. Of the many optimal strategies, this study recommends the pair that yields the least number of coronavirus related deaths. The results for South Africa, which is better placed than the other sub-Sahara African countries, show that failure to address hygiene and adherence issues will preclude the existence of an optimal strategy and could result in a more severe epidemic than the Italian COVID-19 epidemic. Relaxing lockdown measures to allow individuals to attend to vital needs such as food replenishment increases household and community infection rates and the severity of the overall infection.