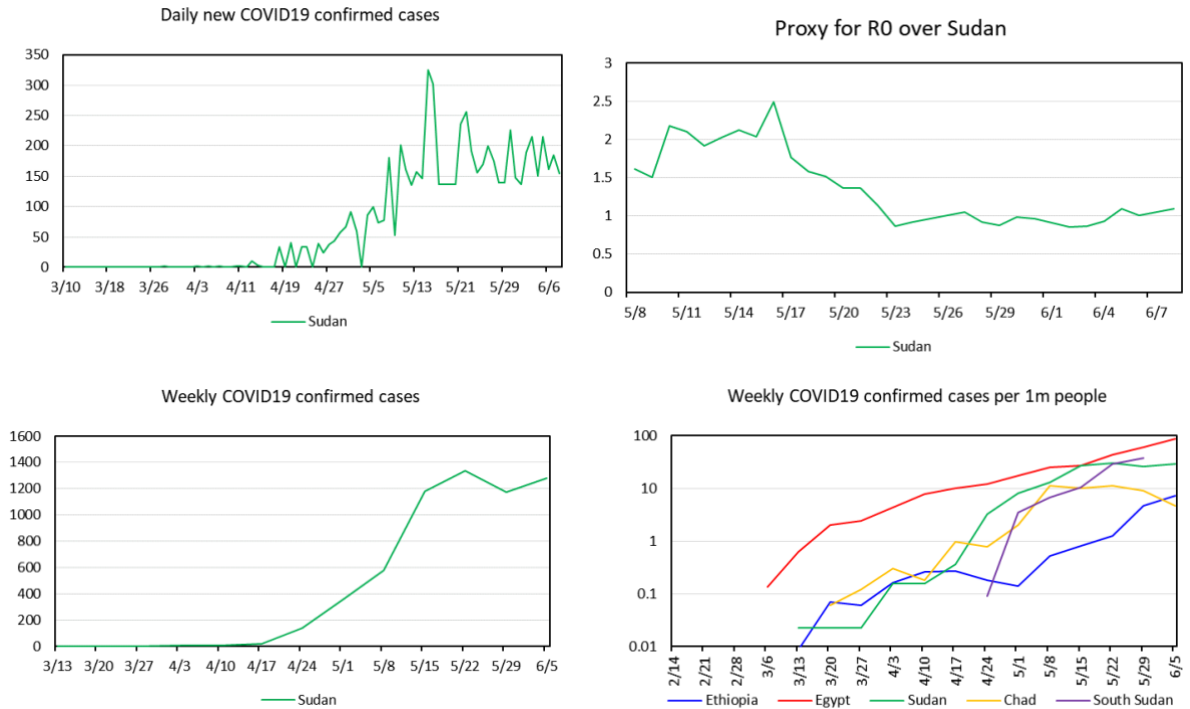


Simple Analysis of COVID-19 Numbers in Sudan-Second UPDATE

(June 11th, 2020) Elfatih ELTAHIR

The dynamics of disease transmission are described by how an existing case reproduces (infects) multiple new cases, a parameter denoted by R_0 . The magnitude of R_0 reflects how strictly the public follows the mitigation measures (curfew, wearing masks, social distancing, hygiene, etc). If $R_0 > 1$, disease transmission accelerates. If $R_0 = 1$, then transmission rate is stable. If mitigation measures succeed in reducing R_0 to < 1 , then disease transmission decelerates. Estimates of R_0 are routinely used by British health authorities in updating the public about COVID-19. In the following, a proxy measure of R_0 is estimated for Sudan by the ratio of weekly cases to number of cases in the preceding week. This is a simple but approximate measure, not following rigorous definition of the variable.



Transmission of COVID-19 in Sudan has been remarkably steady during last four weeks, oscillating between roughly 150 and 200 confirmed cases per day. Estimates of proxy R_0 for Sudan have been very close to 1 for last three weeks. In comparison, the rate of transmission has been increasing in Egypt, Ethiopia, and South Sudan during the same period, but declining in Chad. Apparently, mitigation measures imposed in Sudan since April 18th, were successful in preventing the explosive growth in transmission observed elsewhere, but were not successful in reducing the rate of transmission significantly, or in bringing the transmission of COVID-19 under full control.

By June 18th, existing mitigation measures will be reviewed by authorities in Sudan to accommodate legitimate and urgent needs of citizens within the country to move around, find work and support their families, and needs of citizens trapped outside the country to return into their homeland and join their families. Relaxation of both measures to enable movement will likely result in negative impacts, elevating R_0 , and causing significant growth of transmission rate. In order to prevent such impacts, and in general to bring the transmission under control, I strongly recommend adoption of the successful "[Hong Kong model](#)" in managing COVID-19: (i) [Universal mask-wearing initiative](#) (indoor and outdoor, everywhere, all the time) at the national level (more than existing effort); (ii) Empowerment of civil society organizations (resistance committees, political parties, women & youth organizations, etc) to play a leading role in promotion and enforcement of such national initiative. Sudanese who do not have access to masks should be encouraged to rap their (clean *imma*, *toup*, or *tarha*) around their nose and mouth, while maintaining other social distancing measures. New York, Khartoum, and Hong Kong have (roughly) the same population size; however, death rates from COVID-19 in the three cities are (21,000; ~350; and 4)!! Universal mask-wearing in Hong Kong is probably the main reason, among many others, behind these statistics.