

COVID-19: Lessons for Sudan from Experiences in China, Italy, Iran, and Korea

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The first case of infection by the virus that causes COVID-19 was just announced in Sudan two days ago, March 13th 2020. Here, I would like to draw a few lessons from the experiences of the four countries that, to date, had the highest numbers of infection (China: 81,000; Italy: 21,000; Iran:13,000; and Korea (used here as short for South Korea):8,000). These lessons may help inform development of Sudan's public health policy in reaction to the spread of this disease. I am happy to note that early signs point to a robust reaction from the Sudanese government emphasizing transparency and effectiveness, and some of the recommendations below have already been implemented.

China and Korea offer success stories in control of the spread of this disease. The main lesson from their experiences is that *aggressive and early action is critically important*. China is where the spread of this disease started. On January 23rd, the Chinese government announced a [lockdown on the city of Wuhan](#) (population: 11 million). At that point, the total number of known cases in China was about 1,000. Soon the lockdown was expanded to about 15 other cities, covering the whole Hubei province with a population of about 57 million. This action was described by WHO as “unprecedented in public health history”. As a result of this aggressive and early effort, China was able to control spread of the disease, and last week Apple reopened all its shops in China, while ordering closure of all its shops in the US!

Similarly, Korea took aggressive action manifested in the early testing of hundreds of thousands of its people, and tracking and isolation of infected individuals even using GPS technology! Korea invented the drive-by testing practice, and achieved rates of coverage envied by the rest of the world including the US. As a result, at least the first wave of COVID-19 infection is now receding and the situation seems to be under control. Based on these two experiences, it seems that government action may not prove sufficient until seen initially as probably excessive, and unjustified! However, we better look back later and discover that we overreacted than looking back to regret late and insufficient action.

The lesson from Iran is short and simple, only *science, and not politics, should guide public health policy*. As described in detail in a [recent NYTIMES article by two Iranian experts](#), Iran's failure in controlling the spread of COVID-19 stems from their mistake in making “health policy subservient to politics”. Fortunately, following the recent revolution, Sudan is relatively immune to such a problem.

Italy is the hot spot for COVID-19 in Europe, standing out as the Hubei of Europe. However, the fast and uncontrollable spread of the virus in Italy is the least understood ongoing phenomenon associated with COVID-19. At this point, all evidence is anecdotal and very little is rigorously known. I recently asked one of my friends, a scientist who is currently living in Northern Italy for his take on what is going on? Why does the spread in Italy seem much faster than surrounding neighbors? His answer made a lot of sense to me. Here, I share it:

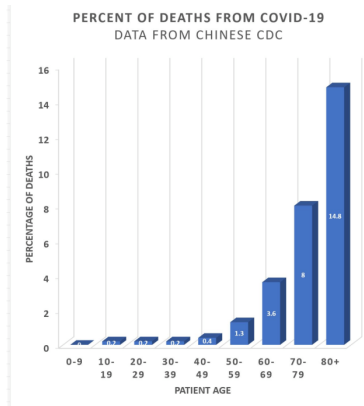
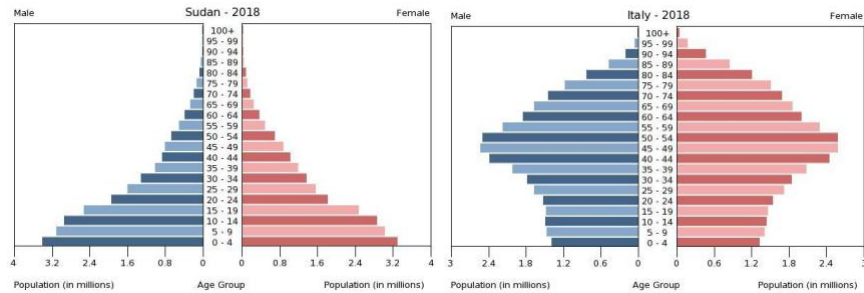
“I'm not really sure why. But I can think of a few possible factors:

- 1. Italians are very social and in very frequent contact with friends and family. Kissing and touching are very common.... People also talk at a very close distance to each other*
- 2. Italy is the second oldest country in the world - second to Japan - with something like 60% of the population over 40. The average age of death has been over 80 and most have had preexisting conditions.*
- 3. The youth weren't taking things seriously, and continued socializing as before. Perhaps they had the attitude that even if they got the virus, they would survive. Then those who were infected passed it on to elderly family members who are at much higher risk of death.”*

Sudanese are very social too! In addition to the critical message about improved hygiene related to COVID-19, *a rigorous campaign advocating healthy “social distancing” measures applied to the*

Sudanese context is necessary. Such campaign should advocate specific and dramatic changes in habits and practices involved in greeting, prayers, weddings, and funerals, as well as all public and private gatherings. Where appropriate, regulations should be imposed to support some of these changes, e.g., a ban on all events.

The Sudanese population pyramid is very different from the Italian (European) pyramid. The relatively high fraction of young people implies that a smaller fraction of the population would face the high death rate associated with older age. This is somewhat good news. However, the relatively large number of



active young individuals per each elderly person (in their 70s and 80s) is much higher in Sudan compared to Italy. Closure of schools and universities, which has already happened in Sudan, should reduce transmission among the relatively young. However, this important difference stemming from the population pyramid would increase transmission to the elderly, and would make it *necessary to exert significant efforts in a targeted “social distancing” campaign that aims to protect the elderly Sudanese from being infected by young active members of the society* who may chose not to “take things seriously, and continue socializing as before” with “the attitude that even if they got the virus, they would survive. Then those who were infected pass it on to elderly family members”. This is especially important, given that most elderly in Sudan live with their families, and traditionally value significant interactions with the younger members of the family.

Several factors may work on Sudan’s side as it fights the spread of COVID-19, including the relatively low population density in Sudan and horizontal expansion pattern of urban development. Further, the virus causing COVID-19 is likely sensitive to climate, although at this point such relationship is not well understood. In the event that the virus does not tolerate high temperature and low humidity, that would be a welcome development for Sudan suggesting that the upcoming months of April, May, and June with their harsh (hot and dry) weather would offer a significant protection barrier that should limit transmission into Sudan. However, even under those favorable conditions, it would be prudent to prepare for possible resurgence of COVID-19 in the next winter.