

Strategies to control COVID-19 and future pandemics in Africa and around the globe

Since COVID-19 has spread around the globe, most countries have applied quarantines and travel bans as a strategy to reduce or halt the spread of the virus and to avoid deaths reaching critical numbers.¹ However, one country, South Korea, appears to have greatly slowed its epidemic without resorting to drastic lockdown; it reported about 75 new cases today (18 March 2020), down from 909 at its peak on 29 February.²

South Korea's mass testing and early detection strategy may have afforded it the luxury of being able to avoid declaring a total shutdown. South Korea has the highest rate of testing worldwide, with >280 000 people being tested for an estimated population of 52 million,¹ and a substantial number of tests were applied very quickly and among the young population (~50% of tests were for people between the ages of 20 and 50, *Figure 1*). This suggests that testing was conducted on a significant number of people who presented no or few symptoms, and mainly for a population where the viral shedding is very high.³

By testing only patients that present with severe symptoms such as fever above 38°C and cough, and not testing patients at an early stage, many countries including Iran, Italy, and France may have failed to

target a significant number of potential contaminators and therefore increased the risk of contamination through asymptomatic people.

The most severe effect the virus can have on an individual is death. Therefore, some strategies, such as those used in South Korea, have shown a positive impact on the mortality rate of COVID-19, while keeping the economy active.

Sadly, deaths in Italy, a country which has 25 times fewer inhabitants than China, has today (26 March 2020) surpassed the number of deaths in China, reaching the highest standardized death rate (standardize rate = 135.37 per million) by 26 March 2020, despite having conducted mass testing (~145 000 on 18 March). This large number of deaths could be due to the following potential reasons: (i) a delay between diagnosis of the first case (22 February) and the start of quarantine 16 days after the first diagnosed case; (ii) the late diagnosis of the first case; and (iii) the lack of mass testing, leading to poorly identifying and eliminating potential new infections and, in turn, isolating those infected individuals.

As with South Korea, Germany is also considered a 'best case scenario', with currently only 198 registered deaths from ~36 508 cases

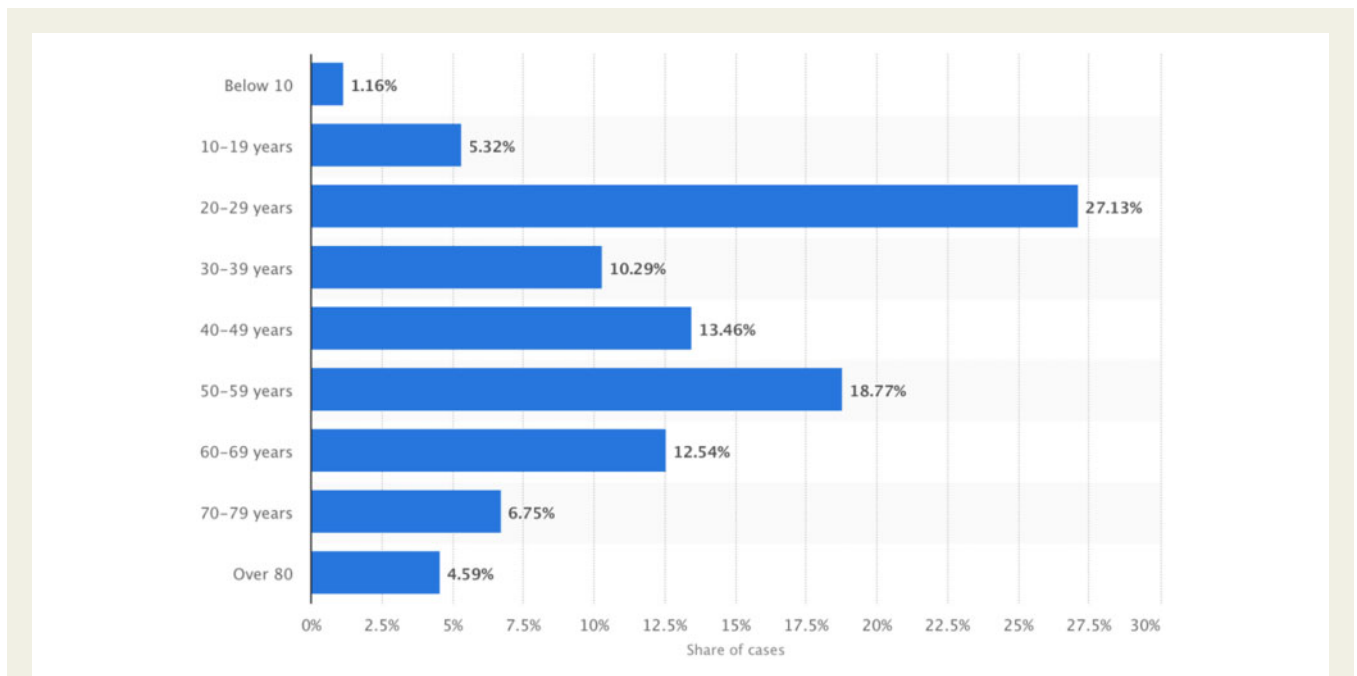


Figure 1 Age distribution of coronavirus (COVID-19) cases in South Korea as of 26 March 2020.

*Source: Statista Statistics.

Table 1 Epidemiological data of COVID-19 cases and deaths (data as of 26 March 2020)

	China	South Korea	France	Italy	Germany	Iran
Total population	1 428 000 000	51 709 098	67 022 000	60 317 546	83 183 741	83 183 741
Date of first case	27/12/2019	Standard	24/01/2020	31/01/2020	27/01/2020	19/02/2020
Number of days since	90	Standard	62	55	59	36
Confirmed cases	82 034	178.71 million	29 155	80 539	36 508	29 406
Active cases	4535	96.04 million	22 511	62 013	30 410	16 715
Recovered/discharged	74 206	80.14 million	4948	10 361	5900	10 457
Death	3293	2.53 million	1696	8165	198	2234
		2.53 million	25.31 million	135.37 million	2.38 million	26.86 million
		57.46 million	435.01 million	1335.25 million	439.07 million	353.51 million
		3.18 million	335.87 million	1028.11 million	365.73 million	200.94 million
		51.98 million	73.83 million	171.77 million	70.96 million	125.71 million

(standardize rate = 2.38 per million), having the lowest death rate in Europe as of 26 March 2020. How is this possible when its neighbours, France and Italy, are counting to date about a 10- to 40-fold increase in their total deaths (Table 1)?

Without precise data on the total number of diagnosed cases and specific characteristics of the patients including age at diagnosis, comorbidities, clinical care, and treatment, it is difficult to pinpoint the true answer to this question. However, it appears that Germany applied what we could call a 'combined strategy', which involved conducting many tests at an early stage while instigating a full quarantine, and this may partly explain the low number of deaths compared with some other countries that only performed quarantine or testing but not at an early stage.

Therefore, methods combining early detection, massive testing by targeting specifically those who are asymptomatic and have a high viral shedding, and extensive efforts to isolate infected people and trace and quarantine their contacts could be the most effective strategies. Now, with Emerging Technologies, quarantine may no longer be the preferred method as it might not be ideal for highly transmittable diseases and could actually be counterproductive in some countries.

Further, it is important to interpret these data with caution. In fact, since the testing strategies across countries vary (e.g. testing symptomatic individuals in France with mostly a high viral shedding vs. testing asymptomatic individuals as in South Korea or Germany), the ratio of deaths among confirmed COVID-19 cases may not be a good estimate to compare the different strategies. More data will be needed in order to better determine the optimal model that should be used to face the next pandemic in the future.

Better safe than sorry: the spread of COVID-19 in Africa

As the virus continues to spread in Africa, with ~1000 or more cases to date (26 March), early actions are needed in order to avoid a continent-wide crisis as is currently seen in Europe. Looking at best practices during this pandemic and past epidemics can help not only to avoid transmission of COVID-19 but also to prevent the possibility of Africa facing the worst of the outbreak. With many low- to middle-income countries in Africa, time is the crucial element needed to contain the spread of the virus. In times of pandemics, countries try to look at strategies used in the past and turn to experts to decide the best steps moving forward.

However, as Africa seems to be at the early phase of the outbreak, African countries are able to look at current real-life examples, such as in Europe and in Asia, to see what works and what does not, in terms of reducing the spread of the virus and minimizing mortality rates. Using a combined strategy from South Korea, Singapore, and even Germany would be ideal; however, it is not realistic as the socio-demographics of those countries are not comparable.

In order to provide African countries with the opportunity to combat the novel virus before it has the chance to flourish, strategies such as educational awareness through social media campaigns and community leaders as well as testing for those who seem to be infected along with their contacts would be the most feasible solutions.

Using similar strategies as used to combat the Ebola outbreak in Democratic Republic of Congo, although a very different outbreak, may provide countries with insight into the ways to contain the virus in

the context of their environment and resources. Theoretically, testing, isolating, and quarantining are the best ways to control, detect, and prevent COVID-19 from reaching a vast majority of the African population, of whom so many are considered vulnerable. To this aim, in order to help local populations to adhere to any action plan, local healthcare organizations and/or authorities should take into consideration the social and behavioural context of Africa.

In fact, given the low socio-economic status in most of the African cities, mass quarantines may mean starving most of the population to death, since most of them struggle to get access to food on a daily basis.

A glimmer of hope and a serious option to consider

Last, but not least, hydroxychloroquine has been found to be effective in the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and interesting results have been reported regarding COVID-19.⁴ A recent study evaluated the effect of hydroxychloroquine on respiratory viral loads and showed that hydroxychloroquine treatment is associated with a significant reduction of viral shedding or even disappearance of COVID-19 in patients, with the results being reinforced by azithromycin.⁵ Hydroxychloroquine has an acceptable safety profile

and is already widely used as prophylactic treatment of malaria in Africa. This is a valid option that needs to be seriously considered.

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References

References are available as [supplementary material](#) at *European Heart Journal* online.