Community Mitigation During SARS-CoV-2 Pandemic: Mission Impossible in Developing Countries

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THE SARS-CoV-2 PANDEMIC inevitably has affected most countries worldwide; however, the impact may vary both between and within countries, partly because of the degree to which control strategies are adopted and executed. The number of laboratory-confirmed cases is fairly high in the United States, China, Europe, Japan, and South Korea in comparison to developing countries. However, this is likely because of the lack of laboratory testing for many suspected and contact cases, weak infrastructures of hospitals and laboratories in many areas, and extremely high population density. These facts render the efficient diagnosis and tracing of infected cases very limited in these countries. In contrast, in Germany alone, about a half million real time RT-PCR (reverse transcription polymerase chain reaction) tests are performed per week.

People in low-income countries are living in overcrowded conditions that make them vulnerable to respiratory infections. Accordingly, it is expected that SARS-CoV-2 is likely spreading rapidly and undetected in communities of these countries. A similar situation was noted during the nightmare of the Spanish flu pandemic in 1918, where the estimated number of deaths in Europe and North America were markedly lower than those in low-income countries worldwide.[1,2] This discrepancy was attributed to inadequate or even lack of access to medical records and extremely high population density, as well as a higher rate of coexisting underlying disease conditions.[3,4]

In developed countries, serious economic losses are expected as a result of this pandemic. However, there is a real risk of economic collapse in developing ones. Developing countries should adopt a strategy that considers their challenges to mitigate the pandemic related to their overpopulation, weak infrastructure, and poverty while still limiting the possibility of major economic collapse. In such countries, there may be little chance to flatten the curve. They have closed schools and universities, and adopted movement restriction of people after a certain time; still, it is not possible to close public transport during the daytime. Public transport alone can lead to massive spread of infection.

Additionally, personal and social behavior in overcrowded slums and rural areas constitute a major challenge to implementing routine conventional systems. In such situations, the spread of the disease is expected to be very high[5] and the rules of community mitigation are not possible to be achieved. In one of the Ebola epidemics, infection spread was enhanced by slum conditions.[6]

Many developed countries are exerting every possible effort to flatten the curve of infection. As of now, Japan and Korea have succeeded in doing this hard task; still, many countries, including most European countries and the United States, have not yet been able to flatten it. This bodes poorly for developing countries, whose aforementioned challenges leave even less likelihood of flattening the curve. Probably some of these low-income countries have characteristic natural geography that may help them to mitigate the spread of infection. However, the World Health Organization (WHO) declared that it is not sure that the infection spread will be mitigated in summer, as it was speculated that very high environmental temperature–sometimes as high as 40° C/104° F–could be very helpful as usually happens with viral respiratory diseases in warm countries in the Middle East and around the equator. The ability of SARS-CoV-2 to spread very rapidly is evidenced by the tremendous number of laboratory-confirmed cases[7]; thus, infection could lurk in a considerable number of asymptomatic and non-screened persons[8] despite less environmental transmission. Yet, this remains speculative until the scope of the outbreak is fully understood using sensitive and specific serological tests.

Obviously, SARS-CoV-2 is especially dangerous to certain members of society, including elderly people–especially those with underlying disease–and to people with compromised immune response. These clusters of patients also are endangered by many other viruses and diseases, including seasonal influenza. The strategy in low-income overcrowded countries should be to target control specifically toward these people who are prone to develop severe disease, deploy and redeploy the limited resources and supplies, and closely monitor and react to admission of severe disease in

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hospitals, considering the lack of testing capacity. Half-hearted control measures likely will not work well in this pandemic. Accordingly, adopting a reality-based control strategy that acknowledges limitations in developing countries' infrastructures, targets mitigation of transmission to at-risk groups, and considers reducing economic damage is recommended. A weak economy and poverty constitute a major challenging threat in such countries. There should be a balance between mitigating the burden of disease while minimizing economic loss. There is a dominant option, one that simultaneously limits fatalities and gets the economy rolling again in a sustainable way.

Many had been concerned about H5N1 being the next pandemic influenza strain; still, the 2009 H1N1 pandemic emerged abruptly. It was expected to possess a catastrophic consequence, because the case fatality rate was particularly high among young people; nevertheless, WHO did not lock down countries worldwide. Fortunately, the overall case fatality did not exceed seasonal influenza mortalities.[9] This finding confirmed the fact that the time, pattern of spread, and lethality of influenza pandemic strains could never be predicted. In contrast, there were several alarming messages prior to the emergence of the SARS-CoV-2, but WHO did not recommend strict control measures in the beginning, likely because of the lack of previous reports of coronavirus being a pandemic strain. Subsequently, the high degree of mild and asymptomatic cases facilitates rapid virus spread in the community with a relatively high case fatality rate compared to influenza, especially in the elderly and those with underlying diseases.

In conclusion, the current pandemic reveals that most countries, including developed ones, are not well prepared to encounter a major pandemic threat. There is an urgent need for country- and population-specific pandemic preparedness strategies to be improved to respond to possible future outbreaks. This is especially the case for developing countries, where inherent challenges in adopting mitigation strategies should be considered in addition to economic consequences that could drastically affect those in economically vulnerable situations.

Author Disclosure Statement

The author declares that there are no conflicts of interest.

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