

Pandemic Preparedness and Response to COVID-19 in Developing Countries

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ABSTRACT

Background: The situation in Low and Middle-Income Countries (LMICs) is unstable, unpredictable, and limited by resources. India, a developing country, has launched a multifaceted response to the COVID-19 epidemic. Regardless of their real pandemic readiness, developing nations performed well in adjusting to the coronavirus disease 2019 (COVID-19) pandemic. COVID-19 death rates and proportions are lower than that of the world at large, despite a rise in the total cases when compared to the remainder of the globe. The COVID-19 outbreak, on the other hand, has highlighted fundamental flaws in the health-care system and stretched it. The region is tormented by a growing double burden of communicable and non-communicable illnesses, limited or inadequate access to excellent health care, pervasive poverty, and malnutrition. To fight this, the Ministry of Health and Family Welfare, the Government of India, and the country's leading medical institutes in India issued a set of rules and standard operating procedures that were communicated via webcasts and multimedia modules.

Conclusion: Due to rising incidence of non-communicable diseases and a lack of strategic planning for modernising health systems, the benefit offered by these emerging nations' younger population statistics may not be lasting. The pandemic has offered a chance for introspection, improved preparedness for upcoming pandemics, and general public health promotion. To invest significant resources in preparing for forthcoming pandemics, strong leadership and political will are required. Developing a robust regional strategy for universal health coverage can improve social protection and reduce fatalities among the poor and vulnerable.

Key words: COVID-19, SARS-CoV-2, Developing countries

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INTRODUCTION

The introduction of the 2019 novel coronavirus (2019-nCoV), also known as the severe acute respiratory syndrome coronavirus 2, has introduced a new public health disaster throughout the world (SARS-CoV-2). The virus was discovered to have originated in bats and it was transmitted to humans in December 2019 in Wuhan, Hubei Province, China, *via* an unidentified bridging species. COVID-19 spreads *via* the air when individuals inhale virus carrying droplets and incredibly small airborne particles. Although they may be inhaled at wider distances, especially indoors, the risk of inhaling them is highest when people are close together. Transmission occurs if infected secretions are splattered in the eyes, mouth, or nose, as well as in rare occasions, through

contaminated surfaces. People who catch the disease can often be infected for up to 20 days after catching it and can transmit this even if they do not show symptoms. Raised body temperature, cough, breathlessness, tiredness, and malaise are some of the manifestations. The majority of individuals have a moderate version of the condition, but it can proceed to pneumonia, pulmonary fibrosis (ARDS), and multi-organ failure in certain cases (typically the aged as well as those with comorbid conditions). The case mortality rate is expected to be between 2% and 3%. Specific molecular tests are used to determine the virus in respiratory secretions.

Common diagnostic findings include normal/low white cell counts and a rise in C-Reactive Protein (CRP). The computed tomographic chest scan is frequently abnormal in individuals with no manifestations or mild disease.

Because there are now no authorised therapies for this illness, prevention is critical. Several characteristics of this virus make prevention difficult, including non-specific disease characteristics, risk of transmission well before the symptom onset during the incubation period,

transmission from apparently healthy people and a long incubation period.

The treatment is mostly supportive; the function of antiviral medicines has yet to be determined. It is suggested that suspected or confirmed cases of mild sickness be isolated at home. To enable for viral eradication, proper ventilation and sunshine should be provided at home. Patients should be urged to wear a basic surgical mask and maintain good cough hygiene. Caregivers should be advised to wear surgical masks while in the same chamber as the patient and to practise hand hygiene every 15-20 minutes.

LITERATURE REVIEW

The developing countries like India, Bhutan, Bangladesh and Pakistan had a low degree of pandemic preparedness and the following factors may be held responsible for that.

Because of the high population density, comorbidities, massive socioeconomic vulnerabilities, and inadequate health system infrastructure, initial projections place these developing nations at an even greater risk of mortality and disaster than has previously been observed [1]. The COVID-19 pandemic strained the healthcare system as it was evident through the dearth of hospital beds, oxygen cylinders, ventilators, drugs like Remdesivir and plasma.

Furthermore, the significant incidence of non-communicable diseases in developing countries adds to the challenge of combating existing and future health issues. Diabetes and COVID-19 are two examples of the region's combined burden of non-communicable and communicable diseases. The discrepancies in health care in these nations have been worsened by poor infrastructure and a dearth of skilled human resources to cope with non-communicable diseases (*e.g.* hypertension) [2].

The countries accounted for as high as 20% of COVID-19 cases and 10% of deaths in the world. However, they took the measures to control the pandemic in all the ways that they could which amounted from social media awareness to allocating resources to needy states and hospitals as and when required.

Pandemic and developing countries

The low and middle income nations such as India, Bhutan, Bangladesh, and Pakistan have a poor level of pandemic readiness, which might be attributed to the following issues.

To begin with, none of these nations have suitable national strategies, standards, or laws in place to be held responsible for the control and monitoring of various zoonotic infections of public health importance. Antibiotics are freely accessible without a prescription in the majority of these LMICs, which can lead to resistance of the organisms to these antibiotics.

Furthermore, most countries in the region devote insufficient resources to health security [3]. Also, while laboratory methods can screen certain important infections, they can't test them all.

Fourth, many joint actions, inclusive of a 22 million dollars COVID-19 emergency aid fund, have begun following a summit of developing countries leaders.

Fifth, health workers are in limited supply in all of developing countries. There is less than one field epidemiologist for every 200,000 individuals.

Finally, forced displacement and a long standing history of urban relocation in developing countries, which accelerated in the postcolonial decades [4].

Due to a hike in the total sum of cases, healthcare institutions and hospitals are overburdened. According to reports, the number of people tested in Pakistan and Bangladesh has dropped drastically. Bangladesh failed to act swiftly enough during the pandemic's early beginnings and it is believed to be one of the reasons of the present increase in case numbers.

Developing countries with lower death rates may not be sustainable in the long run. For starters, non-communicable diseases account for more than half of all deaths. Long-term infection transmission among persons with comorbidities may lead to an increase in fatality.

A comprehensive assessment of the literature concentrating on developing-country populations indicated that individuals with coronavirus disease alongside diabetes had a higher risk of mortality. It can be another argument why the low death rate presented could be seen as an exaggerated means of suggesting here that pandemic response is better compared.

The region has, however, done a good job of responding to the coronavirus disease. Pandemic of 2019 (COVID-19). Despite comparable case increases to the rest of the world, the rate and proportion of COVID-19 mortality are lower.

Each country in the region is equipped to deal with a pandemic to varied degrees, with India being by far the most geared, while Afghanistan being equipped the least. Developing Countries have several distinct characteristics when it comes to pandemic preparedness.

Developing countries began responding to the COVID-19 by the second month of 2020. All governments implemented measures to limit arriving foreigners, including prohibiting international travel, suspending air travel, and requiring quarantine for anyone who made the trip to other nations, for the duration specified by the country.

The overall number of cases among all the developing countries are the most in India (7053806 cases) and the least in Bhutan (316 cases) [5]. Males have been afflicted more than females in practically every country, and the elderly have had the largest overall number of fatalities [6].

The greatest recovery rate has been seen in Bhutan, at 96%, followed by Pakistan, which has a recovery rate of 95%. With a recovery rate of 72%, Sri Lanka is the country with the lowest recovery rate. India has undertaken the most tests per million populations in tandem with the identification of instances.

COVID-19 took the lives of the most people in India (108334 individuals), Pakistan and Bangladesh followed. With respect to case fatality rate (defined as actual number of fatalities from all causes), however, Pakistan has the highest rate (2.06), followed by India (1.5). In Bhutan, no one has died as a result of COVID-19.

Regardless of the fact that almost all emerging countries are heavily populated, they seemed to still have escaped the high fatality seen with Europe and everywhere else up to this point. At this stage it can be described as follows: the population of emerging nations is younger.

Including a mean lifespan of 24.4 years, it has a younger demographic than most other nations. These countries may have an advantage since COVID related fatalities disproportionately affect the elderly.

In comparison to the west, developing countries were hit by the COVID pandemic considerably later. As a result, these nations may have learned from countries that experienced early rise and peaks and thereby improved their public health response. For example: Because more people were wearing masks, this could have resulted in a reduced virus burden.

The number of deaths may have been underestimated due to a lack of timely reporting. The underestimating, however, is unlikely to be significant. For prevention and adequate response, early lockdown and prompt intervention are essential. According to emerging data, the majority of these countries performed timely lockdowns, which may have resulted in a reduction in the overall number of deaths [7]. This lag period specifically aided developing countries in beefing up their preparedness for any prospective influx of cases above the hospital's normal capacity.

Cross-reactive antibody immunity may help to reduce the severity of illness. In these nations, rigorous scientific assessments should be carried out to determine. Whether or whether cross-reactive immunity has a function in lowering severity and mortality.

Natural selection of SARS potential CoV-2 by pre-existing cross-reactive T-cell immunity should be studied to see whether it serves any function.

Cross-reactive T-lymphocytes, probably from prior coronavirus infections, can alleviate sickness severity. There are many additional suggestions that developing countries have a genetic advantage (HT Correspondent, 14 October 2020). According to new research, patients who are asymptomatic or minimally symptomatic exhibit a high degree of SARS-CoV-2-specific cytotoxic T-cell responses [8].

DISCUSSION

The COVID-19 epidemic has highlighted the developing countries' vulnerability. The region is tormented by a growing double burden of communicable and non-communicable illnesses, limited or inadequate access to excellent health care, pervasive poverty, and malnutrition [9].

Despite this, the nations have demonstrated tenacity and determination in combatting the pandemic, instituting strong yet preventative lockdown measures in the early phases of the spread. These populous economically developing nations have no qualms about closing of manufacturing factories and other non-essential businesses, as well as outlawing religious as well as social gatherings. In their fight against the COVID-19 epidemic, developing countries have also used online portals like Dhoondh.com in India, social media to spread awareness and help one another, working from home to maintain social distancing, online schooling to avoid large gatherings, direct transfers that benefitted, conveyance of health care by doctors through online apps like zoom, google meet that helped in direct delivery of message to common man and thermal scanners. Investing in and growing the use of digital technologies, information technology, and data systems can assist developing nations in addressing public health concerns after COVID-19 [10].

However, the measures fell short due to all the above mentioned havoc wreathy conditions and discrepancies in the health care system.

COVID-19 has caused havoc on these developing countries' economy. They are expected to contract for the first time in four decades. People's livelihoods and well-being would suffer as a result of this. The fact that foreign trade was halted during the epidemic worsened the situation. This could push an estimated 132 million people into extreme poverty, exacerbate inequalities, and contribute to increased food insecurity and bad health. These roadblocks are reversing these countries' progress toward achieving the sustainable development goals [11].

In developing countries, the younger population has a demographic edge, resulting in low overall mortality in the region. Poor pandemic preparedness, on the other hand, has highlighted these countries' weak health systems and wide inequities.

In the long run, the COVID-19 pandemic may result in greater rates of death and morbidity due to the burden of non-communicable illnesses and insufficient primary health services.

It was evident that there was paucity of a big public health infrastructure and human resources, and the public health infrastructure has to be expanded. The inadequate health systems in the region are already causing collateral harm as a result of the disturbance in their normal operations. Several parts of health security are absent even in nations that have created effective systems, like India's Integrated Disease Surveillance Programme. With the possibility of future pandemics

approaching, developing countries must make significant investments in the development of strong and resilient health systems. Global helplines, healthcare portals, online illness surveillance systems, telemedicine, and the research and production of inexpensive diagnostics, vaccinations, and medications are just a few examples of how regional collaboration may enhance public health infrastructure and proficiency. The establishment of universal health coverage in developing countries should be prioritised due to overburdened or unskilled healthcare professionals, as well as the uncontrolled private sector. Greater investment in healthcare worker education, upskilling, and employment will result in better dealing and managing of successive pandemics.

Investing in public health is a requirement for economic prosperity. This should begin with an assessment of present pandemic preparedness capacities and priorities, as well as planning and addressing them. National plans must be developed, with frequent changes based on public and private sector input, and best practises in pandemic preparation must be incorporated.

CONCLUSION

There is a feeling of pressing need to plan for subsequent pandemics while tackling the COVID-19 threat. Water, Sanitation, and Hygiene (WASH) are critical components of COVID-19 response and recovery. Best practises for properly managing health care waste should be followed, including delegating responsibilities and allocating enough people and material resources for waste management and disposal.

Preparedness for several hazards, with an emphasis on health, must be coordinated across sectors. Risk assessments and risk preparedness should become a cultural norm for future generations in order to effectively handle catastrophes and public health emergencies.

Documentation of best practises, as well as the development of a knowledge platform for lesson learning, will foster inclusive, participative, and well informed preparatory tactics.

Technology cannot substitute or compensate for other public policy initiatives, but it surely plays an important role in disaster response. COVID-19 provides an ideal chance to consider the legal feasibility, ethical viability, and efficacy of using new technology to guide evidence based public health solutions. We now have various sensing devices, as well as mobile phones, that can measure our temperature, glucose level, blood glucose and other vitals, which is quite useful in handling pandemic circumstances. By offering contactless facilities, digitalization may play a critical role in prospective pandemics. We may employ technology such as drones to avoid human to human interaction, preventing infections from spreading. This reduces the likelihood of becoming infected. Thermal screening is a vital part in the containment of any pandemic. This includes innovative technology such as cordless thermometers and infrared temperature monitoring

devices, which can measure the body's temperature from a range and identify individuals who require more testing. These devices are most commonly found at checkpoints at offices, bus stops, airports, train stations, hotels, retail malls, and public areas. Because the temperature can be detected from a distance, it may help to restrict the virus's transmission among security personnel and other administration staff. To invest significant resources in preparing for forthcoming pandemics, strong leadership and political will are required.

Developing a robust regional strategy for universal health coverage can improve social protection and reduce fatalities among the poor and vulnerable. The region's present social "safety nets," such as food payment transfers, must be greatly expanded. The efficacy of such programmes is demonstrated by India's National Rural Employment Guarantee Act and Pakistan's Benazir Income Support Programme Ehsaan emergency cash programme. Furthermore, inclusive, sustainable urban areas and mobility should be available.

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