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COVID-19 in Pakistan: Current Practices and Associated Risks

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Abstract

Seven coronaviruses were identified previously and these were known to infect human beings. The eighth human coronavirus (nCoV-2019) surfaced in Wuhan, China at the end of the year 2019, exhibiting symptoms of pneumonia and other respiratory problems. As of September 7, 2020, 27 million people have been infected with COVID-19 and more than 900,000 have lost their lives. In Pakistan, the tally of COVID-19 infected cases stands at 298,509 and 6,342 people have died. Government of Pakistan has devised “The National Action Plan for the Corona Virus Disease (COVID-19) Pakistan” to efficiently tackle the pandemic. Many hurdles stand in the way of Pakistan fighting against the COVID-19 pandemic, effectively. Poverty and a low literacy rate are major obstacles in containing the COVID-19 transmission in Pakistan. Pakistan’s healthcare infrastructure is not fully equipped to deal with the pandemic. It is constrained by a very limited healthcare budget, small number of healthcare personnel and limited equipment. The number of tests conducted is very low which cannot give a proper insight into the actual incidence of COVID-19. Thus, it can be concluded that Pakistan, within the given facilities and predictions, is incapable of flattening the curve but the catastrophe can be avoided by taking proper measures in time.

Keywords: COVID-19, epidemiology, Pakistan, public health, SARS-CoV-2

1. Introduction

Coronaviruses [CoVs, family *Coronaviridae*, order Nidovirales] [1] are divided into four genera: *Alphacoronavirus* (group 1), *Betacoronavirus* (group 2), *Deltacoronavirus* (group 4), and *Gammacoronavirus* (group 3). *Betacoronavirus* is further divided into four lineages (A, B, C, and D) [2]. Coronaviruses are named based on their appearance when they are visualized through an electron microscope. Spike projections can be seen embedded in the viral membrane, hence it resembles a crown or ‘corona’ in Latin [3, 4]. Seven human coronaviruses (HCoV) were

identified previously including HCoV-229E, HCoV-OC43, SARS-CoV, HCoV-NL63, HKU1, and MERS-CoV [5]. In December 2019, a novel coronavirus (nCoV-2019) emerged and it was declared to be a global emergency by the World Health Organization (WHO) [6].

Previously, two coronavirus outbreaks were reported during the last 18 years. These included SARS-CoV (Severe acute respiratory syndrome – Coronavirus) and MERS-CoV (Middle East respiratory syndrome – Coronavirus). SARS and MERS are zoonotic viruses which originated from animal sources. They originated from a

bat source. Dromedary camels and palm civets are considered as the reservoir of these viruses. [7]. Recently, several cases of the novel coronavirus named nCoV-2019 emerged [8].

nCoV-2019 genome (GenBank accession number: AY278488.2) is of 29,891 bp and it shows 79.5% sequence similarity to SARS-CoV. The comparative full genome sequence analysis of 4 patients positive for nCoV-2019 showed 99.9 % similarity to each other. 96.2% of nCoV-2019 genome was found to be identical with a short RNA dependent RNA polymerase (RdR) region of (BatCoV RaTG13). The close relationship of this novel coronavirus with RatG13 provides substantial evidence that nCoV-2019 might have originated from a bat source [9]. Data gathered until now suggests that human to human transmission is mainly through the airway [9, 10]. The initial clinical manifestations observed in nCoV-2019 infected patients include fever, cough, headache, myalgia, diarrhea, dyspnea, leucopenia, lymphopenia, thrombocytopenia, hypoxemia, pulmonary infiltration, disturbed hepatic and renal functions and they lead to death in some individuals [11].

COVID-19 epidemic was classified as a worldwide public health emergency of an international concern by WHO. On the 11th of February, 2020 WHO named the virus as “Severe Acute Respiratory Tract Coronavirus-2” (SARS-CoV-2), causing disease known as “COVID-19” [12, 13].

Reportedly, as of September 7, 2020, the number of COVID-19 cases stands at 27 million and more than 900,000 people have lost their lives. In Pakistan, 298,509 people have been confirmed with COVID-19 and 6,342 people have died with it [14]. The grave matter of concern

is that when highly developed countries with outstanding healthcare systems are finding it difficult to contain the virus and to treat the affected, how developing countries such as Pakistan, India, Bangladesh and Iran will cope with the spread of SARS-CoV-2. In developing countries, it is a genuine consideration that if the number of infections exceeds a certain threshold, it will impart long-lasting scars on people’s lives as well as on the economy.

In Pakistan, the first two cases of COVID-19 were confirmed on the 26th of February, 2020 in Karachi and Islamabad by the Federal Health Minister [15]. Initially, the number of cases increased gradually, reaching their highest number in Pakistan in the month of June, and were found to be decreasing afterwards as shown in Figure 1 [16]. To mitigate the impact of COVID-19 on the socioeconomic status of countries and to flatten the spread curve, governments and social organizations have taken active measures. Isolation protocols have been recommended in the regions with high imported as well as locally transmitted cases of COVID-19. All public gatherings, educational institutes, and ceremonial events have been severed to limit the hazardous effects of the infectious disease. The strategy of isolation and quarantine might be the only chance of Pakistan to survive this pandemic.

2. How Well Pakistan is Prepared to Tackle COVID-19

Government of Pakistan has taken various measures for the containment of the viral spread across the country which include the closure of all educational institutions, prohibition of public assemblies and ceremonial events, closure of western borders with Iran and Afghanistan [17], restricting international

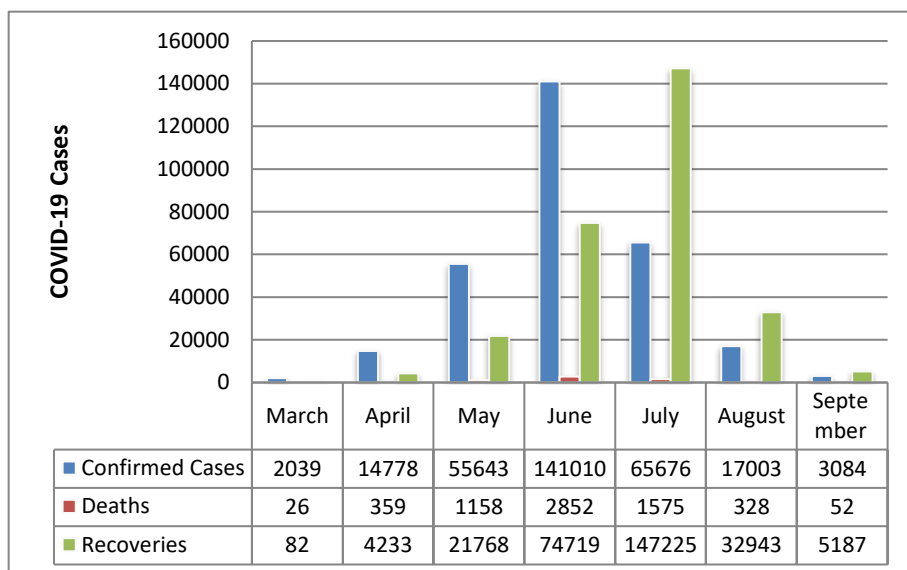


Figure 1. COVID-19 Situation trendline in Pakistan (March to September 2020)

flights to only three major airports, followed by the screening of individuals arriving at these airports. However, these measures might not be enough to contain the pandemic. Federal Government of Pakistan in collaboration with the Ministry of Health came up with a plan labelled as “The National Action Plan for the Corona Virus Disease (COVID-19) Pakistan” aimed to develop strategies to efficiently tackle the pandemic [18]. Moreover, some healthcare equipment has been imported also including face masks, ventilators, and personal protective equipment [19]. Government of Pakistan has allotted a total of 215 medical isolation facility centers with 2942 beds in total in all provinces [20]. Taking into account the situation in Italy, it should trigger an alarm in Pakistan that how will it be able to cope with the pandemic with a limited budget and inadequate healthcare facilities. However, despite all these efforts, there have been lapses and incompetence at every level which might

result in cluster transmission of COVID-19.

3. Possible Hurdles in the Containment of SARS-CoV-2

3.1. Poverty

Pakistan is a developing country with a population of around 210 million. One-fourth of the total population of Pakistan lives below the poverty line; 13% and 31% of population in urban and rural areas respectively lives below the poverty line [21]. Many of the poor depend on their daily wages and if lockdown and travel restrictions are imposed, it is worth asking what will be the possible fate of these segments of Pakistan’s population? Pakistan is neither a welfare state nor can it restrain its citizens and provide them with the necessities of life at their doorstep. Without losing sight of this fact, it can be concluded that precautionary strict quarantine is not practically applicable here. The poor people living in slums are at a greater risk. Firstly, they are not

aware of how to elude the transmission of the virus while living in slums. Secondly, if they are educated and informed about COVID-19 and its effects, they still are not capable of taking precautions in those conditions and due to the unavailability of financial resources.

3.2. Illiteracy

Pakistan has a very low literacy rate of only 62.3% [22] which poses a great problem in reaching people and educating them about the implications of coronavirus. Most of them don't take it seriously at all and are not aware of the consequences if the virus spreads in the country at a large scale. Moreover, their lack of basic knowledge about the biology of viruses and viral diseases can make them deduce false conclusions. Due to inadequate knowledge and misinformation regarding COVID-19, it is difficult to educate masses with no scientific background. Thus, in such settings, cultural gatherings are difficult to control which is another aspect that can fuel the COVID-19 transmission.

3.3. Scarcity of Professional Healthcare Workers

According to the economic survey of Pakistan 2018-19, there are 220,829 registered doctors in Pakistan which makes one doctor available for 963 persons and only 108,474 registered nurses. As far as the total number of hospital beds in Pakistan is concerned, there is one bed available for 1608 individuals [22]. Keeping in view the critical condition and highly contagious nature of SARS-CoV-2, it is worth asking how many doctors will play their part in treating the infected individuals. If the number of critical cases increases, there will be an increasing need of ventilators and the persons who know

how to operate it. We are apprehensive that the Government of Pakistan will not be able to do something in such cases, which will lead to the rise in the number of people dying of COVID-19 due to the unavailability of proper medical equipment. Moreover, if the already low number of healthcare professionals is not provided with personal protective equipment (PPE), there is a chance that more doctors will get infected, thus infecting other individuals under treatment and leaving no doctors to relieve the suffering.

Due to widespread concern and alarm, governments have adopted various measures in an attempt to contain the epidemic. Such measures include quarantine, isolation, and travel restrictions to prevent the introduction of the causative agent and/or its spread

3.4. Unavailability of Adequate amount of Diagnostic Test Kits

According to NIH, by the end of August 2020, 2,603,129 COVID-19 tests have been conducted and 295,636 have turned out to be positive cases of COVID-19 widely spread around the country [23]. One may argue that the screened sample size in a total population of 210 million people is too small. Many private laboratories are also conducting tests apart from the laboratories suggested by the Government of Pakistan. Hence, it is difficult to track how many tests are conducted daily. However, we can speculate that the number is very low as Pakistan is not capable of producing testing kits on its own and it is difficult to import a large number of these kits due to their high cost and high demand, worldwide. The low number of diagnostic tests means that the person infected isn't identified in time and if left undetected, that person will not be isolated and can infect many other

individuals keeping in view the social and family set up in Pakistan. It will eventually lead to the cluster of infections and its widespread dissemination.

In conclusion, due to the spread of virus throughout the country and the existence of undetected cases, the strategy of strict isolation and quarantine in poor countries such as Pakistan is questionable. Government of Pakistan is trying its fullest to contain the virus but without the cooperation of normal people, it is quite a difficult task. It should adopt stricter strategies by significantly imposing strict travel restrictions as well as restrictions on social interaction to effectively cope with this highly contagious and serious disease. The only chance of Pakistan to survive from this pandemic is to take precautionary steps seriously.

3.5. Competing Interests

The authors declare that they have no competing interests.

References

- [1] Weiss SR, Navas S-M. Coronavirus pathogenesis and the emerging pathogen severe acute respiratory syndrome coronavirus. *Microbiol Mol Biol Rev.* 2005;69(4): 635–664. DOI: [10.1128/MMBR.69.4.635664.2005](https://doi.org/10.1128/MMBR.69.4.635664.2005)
- [2] Langereis MA, van Vliet AL, Boot W, de Groot RJ. Attachment of mouse hepatitis virus to O-acetylated sialic acid is mediated by hemagglutinin-esterase and not by the spike protein. *J Virol.* 2010;84(17): 8970–8974.
- [3] Lai MMC, Perlman S, Anderson LJ. Coronaviridae. In: Fields BN, Knipe DM, Howley PM, eds. *Fields Virology*. Philadelphia: Wolters Kluwer Health; 2007:1305–1318.
- [4] Lai MM, Cavanagh D. The molecular biology of coronaviruses. *Adv Virus Res.* 1997;48: 1–100. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7130985/>
- [5] Reed SE. The behaviour of recent isolates of human respiratory coronavirus in vitro and in volunteers: evidence of heterogeneity among 229E-related strains. *J Me Virol.* 1984;13(2): 179–192. <https://pubmed.ncbi.nlm.nih.gov/6319590/>
- [6] World Health Organization. *Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV)*. [https://www.who.int/newsroom/detail/30012020statementonthesecondmeetingoftheinternationalhealthregulations\(2005\)emergencycommitteeconcerningthecoronavirus\(2019-ncov\)](https://www.who.int/newsroom/detail/30012020statementonthesecondmeetingoftheinternationalhealthregulations(2005)emergencycommitteeconcerningthecoronavirus(2019-ncov)). Accessed January 31, 2020
- [7] Su S, Wong G, Shi W, et al. Epidemiology, genetic recombination, and pathogenesis of coronaviruses. *Trends Microbiol.* 2016;24(6): 490–502. <https://pubmed.ncbi.nlm.nih.gov/27012512/>
- [8] Centre of Disease Control. *2019 Novel Coronavirus, Wuhan, China*. <https://www.cdc.gov/coronavirus/2019-nCoV/summary.html>. Accessed January 28, 2020.
- [9] Shi Z-L, Zhou P, Yang X-L, et al. Discovery of a novel coronavirus associated with the recent

- pneumonia outbreak in humans and its potential bat origin. *BioRxiv*. In press. <https://www.biorxiv.org/content/10.1101/2020.01.22.914952v2>
- [10] Poon L, Chu D, Chan K, et al. Identification of a novel coronavirus in bats. *J Virolog*. 2005;79(4): 2001–2009.
- [11] Chan JF-W, Yuan S, Kok K-H, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *The Lancet*. 2020;395(10223): 514–523. [https://www.thelancet.com/journals/lancet/article/PIIS01406736\(20\)30154-9/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS01406736(20)30154-9/fulltext)
- [12] National Center for Immunization and Respiratory Diseases (NCIRD) DoVD. *Coronavirus disease 2019 (COVID-19) situation summary*. Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019ncov/casesupdates/situationsummary.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019ncov%2Fsituationsummary.html. Accessed March 31, 2020.
- [13] World Health Organization. *Coronavirus disease 2019 (COVID-19): situation report-130*. https://www.who.int/docs/default-source/coronaviruse/situationreports/20200529covid19sitrep130.pdf?sfvrsn=bf7e7f0c_4
- [14] World Health Organization. *Coronavirus disease (COVID-19): weekly epidemiological update*. https://www.who.int/docs/default-source/coronaviruse/situationreports/20200907weeklyepiupdate4.pdf?sfvrsn=f5f607ee_2. Accessed September 7, 2020.
- [15] National Institute of Health (NIH) - Pakistan. *Daily situation report-Pakistan: COVID-19 Updated 31st March'* 2020. <https://www.nih.org.pk/wpcontent/uploads/2020/03/COVID-19-Daily-Updated-SitRep-31-Mar-2020.pdf>. Accessed March 31, 2020.
- [16] National Institute of Health (NIH) - Pakistan. *COVID-19 Dashboard-Government of Pakistan*. <http://covid.gov.pk/stats/pakistan>. Accessed September 09, 2020.
- [17] Khan Z, Muhammad K, Ahmed A, Rahman H. Coronavirus outbreaks: prevention and management recommendations. *Drugs Ther Perspect*. 2020;March: 1–3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7095077/>
- [18] National Institute of Health (NIH) - Pakistan. *National Action Plan for Corona Virus Disease (COVID-19) Pakistan*. <https://www.nih.org.pk/wpcontent/uploads/2020/03/COVID19-NAP-V2-13-March-2020.pdf>
- [19] Saqlain M, Munir MM, Ahmed A, Tahir AH, Kamran S. Is Pakistan prepared to tackle the coronavirus epidemic? *Drugs Ther Perspect*. 2020;March: 1–2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7095264/>
- [20] National Institute of Health (NIH) - Pakistan. *List of hospitals province-wise with isolation facilities*. <https://www.nih.org.pk/wpcontent/uploads/2020/03/ListofProvincewiseCOVID19HospitalIsolationWards-Pakistan.pdf>. Accessed May 31, 2020.

- [21] Arif GM, Farooq S. Rural poverty dynamics in Pakistan: evidence from three waves of the panel survey. *Pak Dev Rev.* 2014;53(2): 71–98. https://www.researchgate.net/publication/265084416_Dynamics_of_Rural_Poverty_in_Pakistan_Evidence_from_Three_Waves_of_the_Panel_Survey
- [22] Guy JS, Breslin JJ, Breuhaus B, Vivrette S, Smith LG. Characterization of a coronavirus isolated from a diarrheic foal. *J Clin Microbiol.* 2000;38(12): 4523–4526.
- [23] National Institute of Health (NIH) - Pakistan. *Weekly field epidemiology report*. <https://www.nih.org.pk/wpc-content/uploads/2020/09/35FELTPPakistanWeeklyEpidemiologicalReportAug-23-29-2020.pdf>. Accessed September 07, 2020.