

Arboviral diseases and COVID-19 coincidence: Challenges for Pakistan's derelict healthcare system

Dear Editor,

Coronavirus Disease 2019 (COVID-19) along with other infectious diseases has created a huge impact on the crumbling healthcare system in Pakistan. The relationship between co-epidemics and cooccurrences has been previously reported in many studies and has raised the issue of continuous decimation.^{1,2} According to the World Health Organization's epidemiological report, a total of 172,637,097 confirmed cases of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) positive along with 3,718,944 deaths have been reported worldwide till June 6, 2021. In Pakistan, the total cases have escalated to 930,511 and have taken approximately 21,000 lives.³ With the rapid upsurge of COVID-19 cases and devastating effect on the overburdened healthcare system in Pakistan, many viral diseases including dengue fever, zika, chikungunya, Crimean-Congo hemorrhagic fever, Measles, and Poliomyelitis has become a significant challenge for health authorities. The National Institute of Health in Pakistan has issued a "high alert" on the cooccurrence of these diseases in the coming months.⁴ Table 1 indicates the burden of various viral diseases along with COVID-19 in Pakistan. It is pertinent to mention that Pakistan is in the endemic stage of arboviral infections and emergency preparedness is the need of the hour to avoid the catastrophic impact on the healthcare system.¹³ Such catastrophic effects have been reported in many Asian countries and in Latin America where the COVID-19 outbreak has been reported during the dengue season.^{9,14} A recent study has reported that Brazil has undergone a severe surge of zika, dengue, and chikungunya cases during the ongoing COVID-19 pandemic.¹⁵ High alerts of arboviral infections create numerous logistic and critical challenges for the already worn-out healthcare system in Pakistan. A stern, sensible and judicious action plan is required in haste to quell the aggravating dangers of cooccurrence.

The COVID-19 and arboviral infections (zika, dengue, and chikungunya) share similar laboratory manifestations in their early-stage, which compromise the definite diagnosis and lead to false-positive reporting. Recently, numerous false-positive cases have been reported in India, Singapore, Bangladesh, Pakistan, and Thailand during serological testing but later corroborated as COVID-19.^{9,16-17} Subsequently, misdiagnosis leads to inappropriate and irrational treatment which leads to an increased burden of arboviral infections with adverse clinical outcomes.¹⁸

Pakistan is a developing country with an estimated population of around 216 million. Unexpectedly, population upsurge increased the growth rate up to 2.04% and increased the demand for resources

such as intensive care units, beds in the hospital, laboratory equipment, doctors, nurses, pharmacists, and paramedical staff.¹⁹ This population upsurge can lead to unplanned growth along with health risks, water dumping, drainage blocks, and stagnant water. All such issues create pernicious environments for the proliferation of arboviral infections.²⁰

Pakistan's healthcare system has experienced various challenges during the COVID-19 pandemic including economic turmoil due to less health budget. These financial constraints lead to a shortage of workforce, ventilators, hospital beds, healthcare professionals, and laboratory equipment. As Pakistan has never planned to deal with public health issues that affect the healthcare system, proactive and stern measures are vital to control the ongoing situation. Following standard operating procedures (SOPs) during the lockdown and self-quarantining will not only subside the upsurge of COVID-19 infection but will also help to combat the other arboviral infection outbreaks. The increase in the prevalence of arboviral infections in low-income and developing countries such as Pakistan is due to insufficient access to sanitation, water supply, and hygiene measures. These issues elevate the risk for vector reproduction that potentially and directly augment the arboviral infections along with COVID-19.^{21,22}

Keeping in view the upsurging trend of arboviral infections and the intricate situation of outbreaks, the healthcare system of Pakistan is at risk with growing economic concerns. Suitable and potential measures must be taken under consideration to differentiate patients of COVID-19 and arboviral infections with the appropriate diagnostic algorithm. The health authorities should consider appropriate policies for case management, initiate awareness campaigns, design vector control programs and make documentaries regarding disease prevention and safety protocols. Health authorities should have a proactive recruitment plan for clinicians to avoid any shortage at the time of co-epidemics. The timely reporting of infectious cases by clinicians is of utmost importance to get accurate surveillance data. Moreover, hospital administration should focus on the development of treatment and diagnostic algorithms for such infections. Federal and provincial health authorities must increase laboratory facilities in consultation with foreign agencies and should take active measures to make sure the availability of required medications in the hospitals. Provincial authorities should make a plan to segregate patients so as to lessen upswings of infections and should also develop water management plans and cleaning of roads. Failure to develop programs and policies for viral diseases and lack of provision of newer facilities along with the impact of less healthcare budget can cause

TABLE 1 Disease burden of COVID-19, zika, dengue, and chikungunya

Viral disease	Virus	Incubation Period (days)	First case in Pakistan	Cases in Pakistan	World-wide cases	Fatality rate (%)	Reference
COVID-19	SARS-CoV-2	2-14	2020	930,511	172,637,097 (2019-2021)	-	[3,5]
Chikungunya	positive-sense single-stranded RNA chikungunya virus	2-12	1983	3000 in 2016	146,914 in 2016	0.1	[4,6-8]
Dengue virus	Dengue Virus Serotypes (DEN1, DEN2, DEN3, DEN4)	3-14	1994	103,272 (2015-2020)	390 million every year	<1	[4,9,10]
Zika virus	Virus transmitted by Aedes mosquitoes	3-14	1983	No cases in 2020	84,276 (2016-2019)	8.3	[11, 12]


severe ramifications for Pakistan due to the derelict healthcare system. Taken together, prime consideration should be given to establishing separate wards for each disease, development of diagnostic and treatment algorithms, awareness campaigns among the public, availability of vital drugs in the health vicinities, aggressive monitoring, compliance with SOPs, and training of healthcare staff. Stern prospective measures will not only aid in tackling the situation of co-epidemics but also help health authorities in their continuing efforts against COVID-19.

CONFLICT OF INTERESTS

All authors declared that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

Muhammad H. Butt, Abrar Ahmad, and Tauqeer H. Mallhi were involved in conceptualizing the study. Aqsa Safdar, Attiya Amir, Rana T. Saleem, and Shahzadi Misbah were involved in the literature review and preparing the table. Muhammad H. Butt, Aqsa Safdar, and Muhammad Zaman were involved in the drafting of the letter. Yusra H. Khan and Tauqeer H. Mallhi critically revised the letter for final submission. All authors approved the final version for submission and publication of the content.

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