



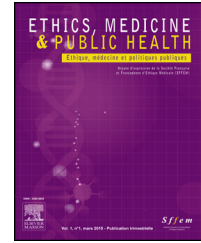
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LETTER TO THE EDITOR

Covid-19, floods, and Dengue: A potential demise of healthcare system of Pakistan



Keywords Covid-19; Dengue; Disasters; Floods; Natural disasters; SARS-CoV-2

Dear Editor,

Pakistan is currently facing a triple threat caused by compound effects of flooding, emerging cases of Covid-19, and water related vector-borne disease such as dengue. As Pakistan was still recovering from the ramifications of previous waves of Covid-19, the country was hit by the worst flood of the century. Satellite images from European Space Agency have shown that more than one third of Pakistan has been inundated [1]. Torrential monsoon rains have resulted in overflowing of the river Indus, causing floods that have claimed lives of more than 1100 people [1]. That is, one in seven Pakistani citizens has had to pay the cost of these intensified rainfalls either in the form of loss of life or loss of livelihood.

Climate catastrophes such as floods superposed with pandemics and outbreaks have been termed as an emergency manager's "nightmare" [2], and rightfully so as measures to curb damage due to multiple calamities become difficult to design and harder to implement. With immense flooding in provinces of Sindh, Baluchistan, and Khyber Pakhtunkhwa, millions of people have been displaced. In this context, social distancing and quarantining measures become more challenging. In flood-hit areas, wearing face masks and other protective equipment assumes secondary importance as major focus of the victims is to save their lives and evacuate the region as rapidly as they can [3]. In addition to this, hand hygiene and the practice of hand washing also becomes difficult to maintain due to lack of clean water supplies.

While the country leadership is still coming to grips with the havoc these floods have wreaked, many private and government organizations have set up flood relief camps to provide calamity-stricken people with funds, food items, and first aid. Due to limited ability of standard operating procedures (SOPs) to be implemented and acted upon, these camps may contribute to the dissemination of Covid-19. This poses a threat to the country's already debilitating healthcare system that has been unable to cope with the increased demand for healthcare facilities. Overcrowding in flood relief camps presents a colossal challenge in implementing disease control and prevention measures to curb increasing Covid-19 infections [3]. It not only places the

general population at a greater risk of contracting SARS-CoV-2 but also puts the health of medical personnel in jeopardy. When those who are supposed to provide care are exposed to such risks, healthcare delivery is greatly compromised. Besides this, with detection of SARS-CoV-2 in human feces and urine [4], flooding with sewage overflows could increase the risk of virus spread in the community [5].

Besides the emergence of new cases and imminence of a possible new wave of Covid-19, an outbreak of water-related vector borne diseases such as dengue should be expected as stagnant flood water promotes mosquito breeding [6]. Monsoon floods present a favorable environment for the dengue larva to develop [6]. Thus, a dengue outbreak post recent floods becomes another imminent threat to the healthcare system. Moreover, other socioeconomic factors such as overcrowding may also contribute to the spread of the virus [7]. It is also important to note here that symptoms of dengue and Covid-19 infection can be similar and may overlap, making it more challenging to differentiate between these two viral infections.

Thus, the triple threat of Covid-19, floods, and dengue can severely cripple Pakistan's healthcare system. World Health Organization has reported that around 888 health facilities had been damaged due to flooding of nearly one third of the country adding to the burden of healthcare delivery [8]. With only 0.6 beds available per 1000 people [6], it becomes challenging for Pakistan's healthcare system to cater to medical needs of flood victims, Covid-19 patients, and those suffering from dengue fever.

Although, there are disaster management plans in place, a collective multidisciplinary approach is needed to translate these policies and recommendations to practice. History presents considerable evidence of how nations and nation leaders managed such public health emergencies despite being in harrowing circumstances. However, the situation becomes more challenging when there is superposition of a global pandemic, a climate catastrophe, and a viral outbreak. Even though, the government is exhausting all its resources to cater to the medical needs of flood victims while also battling Covid-19, several shortcomings warrant a new approach that should focus initially on the prevention of these hazards and if they occur, then on mitigating the damage caused by them. This approach should include identification and elimination of risk factors, development of alternative solutions, involvement of all relevant stakeholders in the decision-making and development of 'adaptation options' which will enable individuals to adapt to the effects of these hazards [2].

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Disclosure of interest

The authors declare that they have no competing interest.

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