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Potential for a 'second disaster in Pakistan: a wave of fatal diseases' - the outcome of the unprecedented floods and the role of climate change

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ABSTRACT

Pakistan experienced a severe flood disaster recently in July-August 2022 due to incessant monsoon rains. It faced a similar scenario in June again this year (2023). The disaster, unfortunately, happened simultaneously when Pakistan was experiencing economic hardships and had only started showing signs of recovery from the COVID-19 pandemic. Affecting about one-third of the nation's territory, millions of homes were either damaged or lost forever due to the floods. As the affected population was displaced and local health units submerged, flood relief camps by public and private sector welfare organizations were engaged to meet the humanitarian requirements of the victims. Vector-borne diseases due to the floods alongside the still ongoing COVID-19 pandemic affected relief efforts. The majority of healthcare professionals were ill-prepared to oversee the flood-affected medical relief camps of that dimension due to the lack of set procedures and protocols, and they learned from their experiences as the situations unfolded. While the situation is still grave from the floods of the previous year, the same again occurring this year in June at a time when the COVID-19 pandemic is still around the corner is certainly a matter of human health and environmental concern. As natural disasters wreak massive destruction every few years there, strategies and the set hazard mitigation and disaster preparedness protocols need to be ensured.

KEYWORDS

Pakistan; Flood; COVID-19; Vector-borne disease; Natural disaster

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Introduction

The deadly and catastrophic flood in Pakistan in July 2022 that was repeated in June 2023 reportedly affected about 33 million people and 1400 healthcare setups, thereby challenging Pakistan's already precarious healthcare infrastructure [1]. Approximately 6.53 million people allegedly died due to SARS-CoV-2, which infected 612 million people worldwide. Pakistan had one of the highest infection rates in the third world, accounting for 30,606 deaths [1]. Infectious diseases like dengue and COVID-19 prevailed simultaneously. Dengue cases increase, especially during the monsoon and post-monsoon seasons. Health agencies reported in September 2022 that the heavy floods that Pakistan witnessed were the reason behind the increasing dengue cases. About 14,173 dengue cases were reported during the period, with Sindh province reporting the largest numbers (5,203), followed by Khyber Pakhtunkhwa (4,538), Punjab (3,101) and Islamabad (1,331) [1]. The persistently inadequate health systems in Pakistan in the face of the COVID-19 pandemic, a projected dengue epidemic, and the risk of other arthropods (like ticks, mosquitoes, and sand-flies) vector-borne diseases may promote pandemic (at least) or epidemic situations, logistics constraints and deepening economic crises. Plague, as a vector-borne disease, was a major cause of global morbidity and mortality during the 17th and 20th centuries. Further, dengue, chikungunya, malaria, and cholera are the most prevalent in the Asian continent [2]. The burden is the highest in the tropical and subtropical regions and disproportionately affects the poverty-ridden Pakistani population, having limited access to potable water and sanitation.

Considering that the current global health crisis is linked to respiratory issues, the impending monsoon and post-monsoon seasons could have been crucial to a sudden spike in COVID-19 cases [3]. There is a possibility that COVID-19 and dengue could strike simultaneously and affect public health and the economy due to the frequent co-occurrence. Due to their similar primary symptoms, COVID-19 and dengue are becoming increasingly difficult to differentiate. As a result of the flood aftermath, infectious diseases like dengue may further strain Pakistan's healthcare infrastructure [3]. As a result of a shortage of medical professionals, a lack of hospital beds, and compromised critical care units, Pakistan's economic and healthcare infrastructure is insufficient to meet the needs of the country.

The Floods Catalyzing the Spread of Infectious Diseases

Natural calamities bring along numerous adversities, and the burden generated generally is always substantial irrespective of the economic status of the region/locality. There were recent floods in Pakistan that claimed 1,500 lives, including 552 children, and displaced nearly eight million people [1]. A natural disaster of such a scale could be a strong reason for the

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emergence of a 'second disaster: a surge of pathogenic diseases and deaths.' Cholera and diarrhea cases have already spiked due to the less accessibility to safe drinking water. The trapped water is a breeding site for mosquitoes, leading to the spread of vector-borne diseases like malaria and dengue [2]. The Sindh province attended to more than 90,000 such cases. In addition to the recorded 17,977 diarrhea and 20,064 skin disease cases, 588 malaria cases and another 10,604 suspected cases are verified. Acute respiratory ailments, skin diseases like scabies, eye infections, and typhoid are also rising elsewhere in other provinces [3].

The current scenario in Pakistan is critical, with millions being displaced and forced to live in unhygienic informal settlements with makeshift arrangements (Figure 1) [4]. Comprehensive and speedy health response is crucial to timely intervene in areas with high incidences of disease and containing vulnerable groups like pregnant women, newborns, the elderly, and the physically disabled, and save lives [4]. An immediate health emergency response needs to be initiated to treat the injured and supply life-saving health facilities to prevent the spread of infectious diseases and further outbreaks.

Figure 1. Millions of Pakistanis live in informal settlements after the unprecedented recent floods [4].

Emergency healthcare services, disease surveillance, and routine immunization programs are urgent and immediate needs and should be beefed-up in the flood-affected district to prevent and control disease outbreaks. Although emergency mobile health camps and vaccination campaigns are being undertaken in the flood-affected areas, however reaching the remote flooded villages remains challenging. It is an absolutely difficult journey to navigate flooded villages and cross broken bridges to reach the needy. Children in the region live on the brink of multiple diseases and widespread malnutrition and are at extremely high risk of carrying the disease and transmitting it [5]. Vaccinators providing basic health and routine immunization services are undone to vaccinate against life-threatening diseases with difficulties in tracing the vulnerable children and their families in their designated addresses as they have either relocated or sheltered at the internally displaced persons (IDPs) camps along the roadside [5]. The loss of crops and livestock is bound to significantly impact the nutrition and health of the communities sooner or later [6]. Pakistan floods triggered health emergencies as the local hospital and clinic healthcare setup were damaged, and the supply chain for medical items and essential household commodities like milk, food, and hygiene-n-sanitation items were disrupted. Affected and contaminated water supply systems during the floods deprived about 2.5 million Pakistanis of access to safe potable water, which resulted in the occurrence of diarrhea and dysentery, particularly among the young population.

Ineffective Countermeasures

The recent flood has grossly damaged the health infrastructure. Health centers are submerged, supplies are ruined, and human displacement has thwarted attempts for healthcare services. It was quite a similar scenario during the pandemic when regular checkups became a myth and immunization schedules were missed in the country, forcing the public to reappear later. As the Pakistani government requested two million nutrition packs for expecting mothers and those with newborns [2], there are appeals to the able members of the society and medical volunteers to support the government in stabilizing the situation.

Food security is one of the main tangible, indirect aftermath of flood [7]. Agriculture is vulnerable to natural disasters like flood and draught causing the crop harvest and livestock losses, that significantly affect the food security and human wellbeing. Standing crops on at least 4 million acres of land were lost due to the flood. Farmers were unable to sow for fresh crops as the cropping season began, as a larger portion of the agricultural land was still inundated. Experts predict a famine crisis if harvests were insufficient for this second consecutive year. Rapid climate change seems to have amplified the occurrence of such events as incessant rain and floods as a repercussion. Climate change reportedly is the cause of malnutrition among 0.8 billion people worldwide, wherein flood plays a critical role. Using indices, studies have examined the relationships between flood hazards and food insecurity. The increasing occurrence of natural disasters like heat waves, droughts and floods brought in through climate change, have impacted food security by affecting food supply systems, as a result of which enough food is not available and the food price shoot up [7]. A household becomes susceptible to food insecurity greatly due to the family type, economic condition, land ownership, whether registered as a 'ration-card' holder and access to credit facilities. The best course of action to address issues related to food security is to adopt strategies on lending facilities, homestead gardening, non-agro activity (like livestock, poultry), expanding the crop variety, adjusting cropping duration, vegetable and oil seed cultivation,

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agro-based technology packages, farmers' skill development and training, and promoting opportunities for passive income [8].

Considering the disastrous floods, WHO promptly released 10 million US Dollars from its contingency fund for emergencies, enabling the delivery of critical medications and other supplies [2]. Its director explained the effects on health and recommended expeditious action to safeguard health and provide necessary medical services. In addition to establishing temporary clinics and medical camps, it assists in restocking other health institutions with medical emergencies. WHO is stepping up disease surveillance efforts to identify epidemics early and provide individuals with necessary care. It has also provided oral rehydration salts (ORS) and water purification kits to manage diarrhoeal diseases. Partnering institutions have ensured proper bed nets and housing.

The situation is terrible, and the cases may burst. Stating the situation as 'beyond bleak', UNICEF is doing its best to support the affected families and their children and to protect and secure them from the imminent danger of water-borne diseases [8-10]. A second calamity in Pakistan no longer seems a pipe fantasy. Humanity must prepare well for the difficulties that lie ahead.

India has learnt the lessons of handling a pandemic situation well, and has shown the way forward whenever it grapples the world in future. National disaster relief force (NDRF) and the state relief machineries (like SDRF) were formed and trained to deal with calamities like the flood and the pandemic effectively. Recently, the Indian NDRF and the defense medical team played a catalytic role in Turkey to save the earthquake victims and the injured there. It is only one of the instances where India has extended timely help during emergencies worldwide. This shows that India is prepared not only to deal with domestic emergencies, but rather also across the globe which should be a pathfinder for many others.

Conclusions

Although the scenario is not unusual there, the precarious situation in Pakistan has still become pathetic, with the healthcare and human relief activities in shambles in the wake of the recurring devastating floods. Significant short-term and long-term health emergencies are often encountered there that manifold in the face of the occurrence of natural disasters. The experiences from Pakistan further emphasize the deep-rooted link between the aftermaths of climate change and human health. Recent experiences of the rising frequency of occurrence, the severity, and the extent of destruction of natural disasters, because that is triggered by global warming and climate change, have put the wellbeing of an ever-growing global population at risk. As a climate change fallout, more and more people will become susceptible to illness as infectious diseases like vector-borne (like malaria) and non-vector-borne (like cholera) diseases spread their wings, manifesting a higher degree of criticality, severity, and trauma. Strong mitigation strategies by the Pakistani administration in close association with the relevant global agencies (such as the WHO, UNICEF, and FAO of the UN) are therefore suggested.

Disclosure statement

No potential conflict of interest was reported by the authors.

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