Editorial

Vector-Born Diseases in The Warming World, Imperative for Interdisciplinary Collaboration

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Vector-borne diseases, with recurrent outbreaks, have substantially threatened public health since the last century.[(1)] The contributing factors include climate change, natural disasters, and failure to control vector surveillance and implementation. In Pakistan, Dengue has expanded across the country affecting thousands of lives, causing hundreds of deaths each year. [(2)] The shift in the weather patterns has caused the epidemiological transition. Recent epidemics have indicated the most severe clinical manifestation. As the earth is becoming warmer, the urgency to address this one health approach is increasing, as the future of this disease will depend on how we respond to the current epidemiological situation of potential mosquitoes such as *Aedes* mosquitoes. [(3,4)] This warmer temperature benefits the breeding situation and facilitates its spread. One health approach not only recognizes the importance of human health but also animal and environmental health which is pivotal to consider in such an alarming situation. This leads to an understanding of the shift in our research expertise and enhances our ability to anticipate, prevent, and prepare ourselves for future long-term pandemic observational studies, integrated vector control, early warning systems, and communication between all sectors from public health professionals to health care scientists will bring a collaborative effort and exert pressure to the implementation of policies.[(5,6)] Climate change isn't a background factor anymore,[(7)] it is now directly influencing the life cycle of vectors and inducing the ability to adapt to the new environment thus they are thriving more and becoming mutants in conventional control measures.[(1,8,9)] Healthcare systems are finding it difficult to cope with the rapid emergence of diseases, leading to delays in diagnostics and thus treatment. To address this the gap between scientific research and clinical practices must be bridged.[(10)] Organizations can play a fundamental role in introducing new technologies in healthcare systems and data management. For instance, predictive modeling trained on local ecological and climate data[(11–14)] can help in early detection surveillance systems and recognize the vulnerable areas of future outbreaks. This proactive approach will facilitate the timely invention of rapid diagnostic kits, vaccines, and other technologies beforehand, such as CRISPR gene editing[(2)] technology enables the invention of sterile mosquitoes that can be engineered not to transmit the disease.[(5)] Clinicians and public health professionals together have a fundamental role as their first-hand experience can ensure the realities that can confirm the epidemiological models likewise, they have an important connection in building community-based interventions.Regardless of independent investigations, there remains a distance between foundational research and its practical implementation in clinical settings. Scientific breakthroughs remain underutilized as they are confined to the labs only. Countless studies are focusing on dengue early detection, prevention and control but dengue remains endemic in Pakistan when the research is disconnected from the frontline health care professionals.[(1,2,4,6)] Policymakers ought to fund sustainable infrastructure and health systems that are modified to address shifting patterns of illness. Significant repercussions will result from the failure to manage climate-induced vector-borne diseases, which will disproportionately impact vulnerable communities in environments with scarce resources. Nevertheless, by focusing on collaboration and one health approach we can overcome these difficulties, and such a response will determine how vector-borne diseases will be transmitted in the coming decades.

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