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Dealing with Extreme Weather Events - A Vulnerability Assessment Study, Current Status and Way Forward

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Abstract

Introduction: Climate change has increased the frequency and intensity of daily weather extremes. Extreme weather events can result in damage to health. As climate-related events become more frequent and intense, the implications for healthcare systems and access to medical services become even more pronounced. The study aims to estimate the vulnerability of India and its states towards the extreme weather condition by calculating a vulnerability index by identifying the specific extreme weather conditions in India. It also explores ways to make the healthcare system resilient to climate change

Methodology: The study combines quantitative data analysis and qualitative content analysis to assess vulnerability, analyse the current healthcare system, and propose recommendations for managing extreme weather events impact on healthcare. Secondary data on historical climate and weather from IMD, was collected to identify patterns and trends in extreme weather events in India. Healthcare Data on healthcare infrastructure, admissions rate related to extreme weather events, disease outbreaks, was collected from reports of NFHS, NITI AAYOG etc. Policy documents, reports, and research articles related to healthcare system preparedness for extreme weather conditions were analysed quantitatively to identify vulnerability indicators such as healthcare infrastructure, resource availability, adaptive capacity, population density, and previous disaster experiences. Vulnerability index was calculated by combining selected indicators using appropriate weighting and normalization techniques to quantify the vulnerability of the healthcare system to extreme weather events. After the calculation of the sensitivity, exposure and adaptive capacity separately, vulnerability index was calculated by using the following formula: - Vulnerability is equal to exposure plus sensitivity minus adaptive capacity.

Results: The association between daily variation in meteorological conditions and mortality has been well established from studies on wide range of populations in India. The ten most vulnerable states to extreme weather events due to climate change according to the estimations on vulnerability index are Meghalaya at the topmost followed by Madhya Pradesh, Rajasthan, Gujarat, West Bengal, Assam, Karnataka, Odisha, Tripura and Uttar Pradesh. Thera are gaps in healthcare delivery like inadequate infrastructure, limited resources, and fragmented coordination between different levels of healthcare services.

Conclusion: The study shows that linkages between climate change and human health are complex and multi-layered and predictions of the future health impacts of climate change are still uncertain. The current state of the Indian healthcare system reveals several gaps that must be addressed to effectively tackle the challenges posed by extreme weather conditions. Precisely at a time when India is confronted with development imperatives, we will also be severely impacted by climate change. With close economic ties to natural resources and climate-sensitive sectors, India may face a major threat, and require serious adaptive capacity to combat extreme weather events due to climate change.