Climate change and poor weather could have a variety of consequences on disease transmission.

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Introduction

Climate change has long been recognised as a factor in the appearance and spread of epidemic diseases. Hippocrates' observations on seasonal illnesses in the fifth century B.C.E. served as the foundation for his epidemic treatise. Winds, waterways, and seasons were also regarded diagnostic elements in Hippocratic medicine, which attempted to anticipate the course and prognosis of an illness based on its symptoms. In terminology like "cold" for rhinovirus infections, malaria, derived from the Latin for "foul air," and the frequent complaint of feeling "under the weather," ancient conceptions about the impact of weather and environment on disease survive in the medical and vernacular lexicon [1].

Researchers are now looking at the long-standing links between climate and disease from a global perspective, thanks to evidence that the Earth's climate is changing. Increased atmospheric and surface temperatures are already contributing to the global burden of disease and premature deaths, and they are expected to have an impact on the transmission dynamics and geographic distribution of diseases like malaria, dengue fever, tick-borne diseases, and diarrheal diseases like cholera. Droughts, heavy precipitation events, and flooding are all intensifying as a result of global warming, with the intensity, frequency, and length of droughts, heavy precipitation events, and flooding all increasing. Extreme weather events have been more common in recent years, and they have been connected to global warming. These meteorological phenomena may contribute to and raise the risk of a variety of vector- and non-vector-borne diseases in humans, plants, and animals.

Future climate change and extreme weather occurrences are expected to have mostly negative health implications. 1 The most severe consequences are projected in low-income countries, which have the least adaptive capacity. As evidenced in 2003, when tens of thousands of Europeans died as a result of record-breaking summer heat waves (Kovats and Haines), developed countries are likewise vulnerable to the health effects of weather extremes. Climate change is projected to exacerbate other factors that contribute to the spread of infectious diseases, such as global trade and transportation, land use, and human migration [2].

Coincident changes in climate and infectious diseases

According to Epstein, there are no acceptable, independent controls for the research of global climate change on Earth. To measure changes in biological variables, such as the geographic range and incidence of diseases, in connection to changes in temperature and precipitation, a variety of approaches must be used. Geographic information systems (GISs) can be used to identify and compare physical and biological events using data gathered from a range of monitoring and mapping approaches. GISs contribute to descriptive and mathematical models that can be used to project the biological implications of various climate change scenarios by allowing the overlay of several sets of data. Additional methods are used to analyse data from a variety of scientific disciplines in order to uncover patterns and emerging trends related to climate change, calculate rates of change (for example, in the geographic range, prevalence, and incidence of infectious diseases), and compare observed outcomes to predicted outcomes.

Epstein acknowledged that many of the methodologies used to study climate change effects produce correlations rather than proof of causation, but he argued that when observational data from multiple sources matches model projections, is consistent with each other, and can be explained by plausible biological mechanisms, the preponderance of the evidence warrants further attention and exploration. Models might also be employed to test such connections and their apparent underlying mechanisms, he suggested.

Epstein identified three outcome variables as critical to understanding the impact of climate change on infectious disease distribution: alterations in altitude (and latitude), seasonality changes, and reactions to increased weather variability [3].

Climate and Health

Climate change will have an impact on human health as well as the ecosystems and species on which we rely, according to a recent paper edited by Epstein and Evan Mills, and these health impacts will have economic ramifications. Climate change has a wide range of known and projected health impacts for humans, animals, and plants, according to the research. These effects include increased pest damage to crop plants, which could contribute to human malnutrition; higher concentrations of pollen and fungi in the air, raising the risk of allergic symptoms and asthma; and higher rates of injury and death due to weather disasters and fires, in addition to influencing the location and frequency of infectious disease emergence and outbreaks. "It appears that we may be underestimating

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Received: *16-Mar-2022, Manuscript No. AAJPHN-22-113;* **Editor assigned:** *17-Mar-2022, Pre QC No. AAJPHN-22-113(PQ);* **Reviewed:** *22-Mar-2022, QC No. AAJPHN-22-113;* **Revised:** *25-Mar-2022, Manuscript No. AAJPHN-22-113(R);* **Published:** *31-Mar-2022, DOI: 10.35841/aajphn- 5.3.113*

***Citation:** Buttle C. Climate change and poor weather could have a variety of consequences on disease transmission. J Pub Health Nutri. 2022;5(3):113*

the extent of physiological reactions to changes in climate," Epstein concludes [4]

Climate variation and infectious disease transmission

Several recent studies have looked into the link between short-term climatic variation and the occurrence of infectious diseases, particularly the impact of the El Nio/Southern Oscillation on the transmission of vector- and non-vector-borne diseases like malaria, dengue fever, cholera, Rift Valley fever, and hantavirus pulmonary syndrome. The irregular cycling of warm (El Nio) and cool (El Nino) phases of surface water temperatures over the central and east-central equatorial Pacific, known as ENSO, is a well-known source of climatic variability (see Haines in and Chretien in). Temperature and precipitation patterns in the tropics are influenced by ENSO-related variations in ocean surface temperatures, resulting in excessive rainfall in some places and drought in others [5].

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Citation: *Buttle C. Climate change and poor weather could have a variety of consequences on disease transmission. J Pub Health Nutri. 2022;5(3):113*