Weather Change Effects on Human Health

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Introduction

Increases in greenhouse gas emissions are causing higher in sea surface temperature, enhanced severity of extreme weather events, worsening air quality, and unstable ecological systems, as per climate change science. Excessive heat-related illnesses, vector- and waterborne diseases, increased exposure to environmental toxins, exacerbation of cardiovascular and respiratory diseases due to declining air quality, and mental health stress are just a few of the direct and indirect health consequences of such a global imbalance. As the elderly and urban populations age and become less able to adapt to climate change, their vulnerability to these health impacts will grow. Furthermore, the degree of vulnerability to particular health effects varies by region. As a result, health must be a key component of climate change mitigation plans on a local stage The co-benefits of increasing health while preventing climate change will strengthen public health infrastructure today while limiting the harmful effects of climate change for future generations.

The International Panel on Climate Change (IPCC) released a revolutionary study on climate change in 2007. There is indisputable proof of global warming. Increases in greenhouse gases are most likely to be responsible for the majority of the warming over the last 50 years. Global warming has already had an impact on the physical and biological systems of all continents and oceans. Warming is expected to continue in the coming decades. The long-term impact of pollution is becoming more apparent. The evidence of global instability of natural systems shows the global effects of climate change. The melting of icecaps and glaciers, the early arrival of spring, ocean warming, rising sea levels, extreme weather patterns, and the degradation of coral reefs are all manifestations of these effects.

Per the IPCC 2007 research, some future climate change predictions are as follows: Heat waves are very likely to become more severe and frequent (>90% probability). Heavy precipitation occurrences are very likely to become more frequent (>90% likelihood), Tropical cyclones are likely to become more intense, with higher peak wind speeds and greater rainfall (>66% probability). Increase in drought-affected areas is likely (>66% chance). A rise in the occurrence of exceptionally high sea levels is likely (>66% probability). Climate change will have major regional variations in its impact and the demographic groups affected. The effects of the urban "designed" environment are added to the impact of climate change-driven temperature rises. In fact, cities and their climates are co-evolving in such a way that the impact of heat will be increased, as will urban populations' sensitivity to heat-related fatalities. For example, cities today house more than half of the country's population, up from 30% only 50 years ago. Every year, urban areas gain an estimated 67 million people—roughly 1.3 million every week. By 2030, cities will house almost 60% of the expected global population of 8.3 billion people. This population growth will be accompanied by increased urbanization, with towns fast converting from natural vegetation to constructed infrastructure that boosts heat storage capacity, a phenomenon called as the Urban Heat Island (UHI) effect.

In the local climate, the UHI effect can be a great force. The combined effect of concrete and blacktop roads' high thermal mass and the limited ventilation capabilities of urban "canyons" generated by tall structures amplify the temperature increases caused by climate change. UHI can raise ambient air temperature by 2–10°F when compared to surrounding rural areas. More crucially, UHI absorbs heat during the day and radiates it at night, elevating night-time minimum temperatures, which have been

linked to increased mortality in epidemiological studies. Whenever it relates to heat waves, the media's focus on climate change tends to be on average temperature changes. Extremes in temperature, on the other hand, have a higher influence on humans than regular temperature increases, and they do so in greater numbers. Heat waves (severe temperature phenomena) killed an estimated 29,817 to 30,617 people in Europe in 2003, aggravated cardiovascular, cerebrovascular, and respiratory problems, and killed an estimated 29,817 to 30,617 people. The elderly and socially isolated made up a substantial part of those who died, as these are the groups most exposed to high heat. Heat waves are expected to become more frequent and last longer, according to recent studies.

The impact of UHI and the CO2 dome on urban aeroallergens will have an impact on air quality. A prolonged growth season will occur from increased CO2 levels and warmth, resulting in an increase in ragweed and pollen counts. Forest fires are a serious hazard to air quality in rural regions, since climate change disrupts the hydrology and causes drier conditions. Poor air quality owing to aeroallergens and/or smoking is most likely to affect young children, pregnant women, the elderly, and individuals with pre-existing respiratory and cardiac illnesses. Floods, landslides, debris flows, and mud flows become more severe as the frequency of intense rainfall (extreme precipitation events) increases. Parts of Bangladesh, Nepal, and India already have suffered this. Increases in sea surface temperature have resulted in an increase in tropical cyclone intensity, which has resulted in an increase in storm surge height. Large populations dwell along the coasts of South Asia, and they will bear the brunt of the growing number of tropical cyclones.

Extreme precipitation events will become more often, increasing the danger of waterborne illness outbreaks. Heavy rainfall events can quickly overflow ageing sewer systems or treatment facilities, which are designed to channel surplus untreated storm and wastewater runoff into surface water bodies. In 1993, a Cryptosporidium outbreak in Milwaukee resulted in 405,000 people being infected and 54 deaths. The outbreak was preceded by the highest rainfall in the Milwaukee basin in 50 years. As temperatures rise in tandem with CO2 emissions, more favourable habitats for toxic algal blooms emerge. Warm surface waters and nitrogen runoff from sewage overflows into surface water bodies are ideal for these blooms. Algal blooms create potent liver poisons, are linked to an increased risk of hepatic cancer, and are moving from tropical areas to formerly cooler waters as surface water temperatures rise. The blooms' powerful poisons might pollute drinking water and pose a major threat to public health infrastructure. Mercury poisoning fish poisoning can result from exposure to the toxin through the ingestion of exposed fish. Algal blooms can also cause ecosystem disruption, as seen by the death of sea grass and surrounding coral reef systems in Florida bay estuaries.

Global warming may have an impact on the distribution and abundance of vertebrate hosts, resulting in an increase in vector borne and infectious illnesses. Vectors, which act as a link between animal and human hosts, are predicted to rise in frequency and range, as per climate forecast models. Certain tick species that can carry Lyme disease are expected to increase their range from the north-eastern United States into Canada as a result of the warmer winter months, according to these models. Changing social, economic, and epidemiological landscapes that enable disease transmission must be recognized in the spread of diseases preceded by climate variables. Climate change has a wide range of potential health impacts, ranging from direct effects like heat waves and other severe weather events to indirect ones like population displacement and mental health challenges. To reduce the health impacts of climate change, strategies must focus on strengthening responses to a slew of ongoing challenges that will recur with greater frequency, intensity, and geographic scope. Because the health and vulnerability of communities to climate change varies by area, regional interventions are required. Collaboration and integration across regions also aid in the maintenance of already adverse economic conditions. Climate change is already having an impact on health in a variety of ways, including increased death and illness from increasingly common extreme weather events like heatwaves, storms, and floods, food system disruptions, increases in parasitic infections and food-, water-, and vector-borne diseases, and mental health issues. Furthermore, many of the social determinants of human health, such as livelihoods, equality, and access to health care, as well

as social support structures, are being affected by climate change. The most vulnerable and disadvantaged, including women, children, ethnic minorities, poor communities, migrants or displaced persons, elderly populations, and those with underlying health issues, are disproportionately affected by climate-related health concerns.

Improved surveillance of current environmental and health data systems will be required in all efforts. Regional and city-wide requirements must be analyzed, and public health services must be retooled to provide effective responses in these areas. The concept of co-benefits, or synergies between mitigation efforts and health in the form of adaptation measures, is another essential principle. Climate change mitigation programs help people reduce greenhouse gas emissions while also improving their health. To summarize, climate change has become a mainstream issue that must be addressed as a public health issue. As a result, the costs of failing to take adequate and timely action are considerable. Although it is obvious that climate change has an influence on human health, correctly estimating the scope and impact of many climate-sensitive health hazards remains difficult. Scientific breakthroughs, on the other hand, are gradually allowing us to ascribe an increase in sickness and mortality to human-caused warming, as well as more clearly define the implications and size of these health hazards.

Climate change is the single greatest health concern confronting humanity, and health experts all across the world are already reacting to the consequences of this emerging calamity. The Intergovernmental Panel on Climate Change (IPCC) has decided that the world must restrict temperature rise to 1.5°C to avoid catastrophic health effects and millions of climate change-related fatalities. Past emissions have already made a certain level of global warming and other climate impacts unavoidable. Even 1.5°C of global warming is not regarded safe; every tenth of a degree of warming will have a significant impact on people's lives and health. The climate disaster has the potential to reverse fifty years of gains in development, global health, and poverty reduction, as well as to exacerbate current health disparities between and within people. It puts at risk the realization of universal health coverage (UHC) in a variety of ways, including by worsening existing barriers to accessing health services, which are often needed at the most inconvenient times. More than 930 million of people, or around 12% of the world's population, spend at least 10% of their household budget on health care. Because the poorest people are mainly uninsured, health crises and strains already push roughly 100 million people into poverty each year, and the effects of climate change will exacerbate this trend. The sensitivity of people, their resilience to the current rate of climate change, and the extent and tempo of adaptation will determine the health implications of climate change in the short to medium term. In the long run, the consequences will be increasingly determined by how much transformational action is taken now to decrease emissions and prevent severe temperature thresholds and potentially irreversible tipping points.

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