

Threat and Responses to Global Effect of Climate Change on the Atmosphere on Human Health

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ABSTRACT: One of the most serious risks to humanity is global climate change. Global warming has caused the average global surface temperature will rise during the previous century. Rising seas, increased temperatures, heat stress, decreased air quality, population movement, and severe weather extremes such as floods, earthquakes, droughts, volcanic eruptions, and tsunamis all affect human health, either directly or indirectly. Because of their high degree of exposure, government mismanagement of the public healthcare system, poverty, and other factors, certain individuals are more sensitive to this alteration than others. Age, geographic location, gender, malnutrition, and other factors might have had a big influence on public health. If we do nothing to address the already worsening global climate, infectious illness, vector-borne, water-borne, and so on, may spread more easily. Indirect repercussions such as population mobility leading to stress, economic instability, homelessness, and so on are also major sources of worry. This paper examines the effect of global warming on the environment, including increased mortality from severe weather events, strategies for addressing these ongoing changes, global warming perspectives from various countries, the vulnerability of low-income countries' populations, economic instability as a result of global warming, or its impact on certain countries, as well as the need to use sustainable but also energy-efficient equipment to preserve our environment.

KEYWORDS: Climate Change, Global Warming, Health, Environment, Vector-Borne Disease, Heat Stress, Droughts, Water-Borne, Economic Instability.

1. INTRODUCTION

Increased average air temperature, melting glaciers, ocean temperature, sea ice, increasing sea levels, or other factors all contribute to climate change. Human exposure to particle matter and other allergens, as well as secondary pollutants, may have negative impacts on cardiorespiratory health. Furthermore, climate change causes a slew of issues such as mental health issues, starvation, water-borne sickness, even vector-borne illness, putting the human population at risk (Valentová & Bostik, 2021). Climate change, if left unchecked, would have devastating health consequences. Infectious illnesses spread by vectors (e.g., malaria, Cholera,), water (diarrhea), food, or other indirect impacts of climate change include mortality from heat stress, deaths or injuries from cyclones, hurricanes, or storms, drowning in floods, etcetera (Mathioudakis et al., 2020). These direct or indirect effects have an influence on people's livelihoods, food security, water resources, as well as agricultural productivity, among other things. Physically and psychologically health, environmental devastation, house destruction, forced relocation, mass migration, conflicts over water or food, internal including international safety, or the possible collapse of society, energy, and transportation are all repercussions of climate change on humanity. Climate change has altered the Earth's geological, biological, or ecological processes in potentially irreversible ways. As a result of these changes, significant environmental dangers to people's health have emerged, such as severe weather, enhanced wildfire risk, and biodiversity loss (Malhi et al., 2020).

As a result, one of the best solutions to changing climate may have been a reduction in greenhouse gas (GHG) emissions, which are one of the primary causes of global warming. Man-made substances such as chlorofluorocarbon have also been degrading the stratospheric layer but also causing holes to appear in it. Assume that nothing is done to slow the ozone layer's depletion. In such a situation, UV rays would rise on the earth's surface, causing skin cancer and a slew of other health issues (Keen, 2021). The major goal of this article is to present instances of worldwide challenges and viable solutions to preserve the public and the environment from global climate change. Climate change and its impacts on

the environment have been explored in this article, as well as the perspectives of various nations on climate change, the consequences of climate change or natural disasters, the economic element of climate change, and potential solutions (Arenilla & Rada, 2020). This document will make people realize climate change or improvement them to use more ecological or energy-efficient gadgets to minimize energy consumption or waste. Climate change has the potential to stymie, stop, or reverse worldwide efforts in lowering child malnutrition, diarrheal disease fatalities, and the development of other infectious illnesses. Climate change mostly works by increasing existing, sometimes massive, health issues, particularly in the world's poorest regions. Weather changes already have several negative consequences on the human health of impoverished people in poor countries, but they are anticipated to be 'multiplied' by the additional stressors of climate change (Simpson et al., 2021).

Anthropogenic-derived gas emissions are one of the key sources of global heating, which leads to climate change and, as a result, affects public health directly and indirectly. CO₂ levels, which account for around 63 percent of all greenhouse gases, may be used to estimate global warming (GHG). These gas emissions have already raised the temperature of the Earth's surface by 0.80°C and are anticipated to raise the temperature of the atmosphere by 0.20°C every decade.

1.1. *Extreme heat:*

One of the first warmings of the planet will be climate change. This will result in higher temperatures or during the day-night, increasing mortality, particularly among the elderly. Heatwaves have two distinct characteristics. The first characteristic is excessively warm circumstances, which suggest abnormally high temperatures, which implies that equal temperatures might have different impacts in various places or at different times of the year, as well as a continuous exposure. The second, sustained exposure, distinguishes heat waves from hot days that occur at different times. Heat waves that last for many days may have negative consequences for public health, infrastructure performance, and other factors (T. K. Sharma & Prakash, 2020).

1.2. *Changes in the pattern of precipitation:*

If no action is done, global climate change might have had a substantial effect on the environment. It has the capability of altering snowfall and rainfall patterns. According to recent studies, there is a 90percentage chance that around 3 billion people in the world will have to choose between migrating to regions with milder climates or going hungry as a consequence of international crop agrarian failure caused by climate change, which would be the result of a lack of precipitation (Singh et al., 2018).

1.2.1. *The effect of melting glaciers or sea ice on biodiversity:*

The temperatures in the Arctic have been increasing at double the world pace, causing glaciers, sea ice, and other ice to melt at an alarming rate. Warmer temperatures are expected to drive the extinction of 15-40percent of the world's biodiversity. Polar bears, emperor penguins, ringed seals, and beluga whales, among the world's most iconic Arctic animals, are all under threat from diminishing sea ice. The melting of the Greenland ice sheet is raising sea levels. If the ice sheet melts altogether, the sea level might rise by 23 feet. According to experts, if the region heats only a few degrees further, the melting of ice sheets would be uncontrollable, culminating in floods (R. Sharma et al., 2020).

1.2.2. *Air Pollution, Global Warming, and Climate Change:*

Global climate change will be exacerbated by global warming. This shift will impair healthy lungs by changing ambient temperatures, particle matter (PM) levels, ambient allergens, and ozone levels. Given that air quality and global climate change are both closely connected to emissions, it is evident that lowering GHG levels, which are the major source of global warming, would improve air quality and decrease air pollutants, potentially protecting humanity from the negative effects of climate change. In the lower atmosphere, nitrogen oxides (NOX), methane (CH₄), and a variety of other volatile organic molecules may interact to form ozone. Ozone, which is found in the lower atmosphere, is a dangerous contaminant. When ingested in large quantities, it may harm human health and

degrade the environment. It is also a greenhouse gas (GHG) that may contribute to global climate change (The Phan et al., 2021).

1.3. *Heatwaves hurt public health.*

As the frequency of heat waves rises the climate change. Hot weather is strongly linked to mortality, particularly among the elderly. Heat waves that last too long may cause death from cerebrovascular, cardiovascular, and pulmonary causes. Because of a phenomenon known as the urban heat island effect, the number of premature fatalities is greater in cities. In comparison to the adjacent suburban-rural communities, the temperature is greater here. Heatwaves also contribute to increased air pollution, which leads to an increase in mortality rates. Europe is the finest illustration of how, in the absence of integrated and coordinated response, even high-income nations may suffer negative consequences that result in a substantial number of fatalities (D. K. Sinha et al., 2012).

1.3.1. *Dealing with Heat Waves:*

To combat heat waves, emergency measures such as behavioral counseling, access to cooled rooms, and so on should be implemented. Using air conditioners is not a suitable solution since it would merely increase anthropogenic heat output and is also unsustainable. Instead, we may use superior strategies such as cool paints, exterior shading, and building insulation. These are far more practicable since once installed, they need very little or no energy to function. Storms, floods, and droughts hurt public health.

Because even a 1°C increase in atmospheric temperature may generate an increase in the proportion of saturation levels of atmospheric water vapor, which provides water for rain, global warming can trigger excessive precipitation. Flooding will become more common as a result of extreme precipitation, resulting in economic losses, detrimental impacts on land and aquatic ecosystems, and human communities. Climate change catastrophes will have a variety of health consequences, including physical harm, numerous illnesses, death, and long-term implications on human mental health. Spain saw a flood in 1996 as a result of a

torrent of water and muck that inundated a campground along a channelized river, killing 86 people. Flooding may also trigger the mobilization of chemicals in the environment, such as pesticides, from industry and other sources. Heavy metal soil pollution was discovered in the Meuse River following the floods. It had the potential to endanger the health of riverside residents since polluted water carried high amounts of lead and cadmium into floodplain soils (Kumar et al., 2018).

1.4. *The Influence of Infectious Diseases:*

Most infectious disease-carrying organisms are climate-sensitive; including vector-borne illnesses are one of the greatest examples of this kind of sickness. They have a seasonal pattern that is influenced by temperature and rainfall. Malaria is an instance of a vector-borne illness that exhibits seasonal fluctuation in certain areas owing to climatic variables. Temperature, rainfall, soil moisture, sea-level rise, and humidity all have an impact on vector-borne disease transmission. These illness pathogens need the presence of a host, a capable vector, and a sufficient quantity of these pathogens all at the same time. As the world's climate changes, the length of the transmission season may lengthen in certain areas (Rastogi et al., 2019). These infectious illnesses are anticipated to have a greater impact on many low-income nations. It is expected that industrialized nations that have previously managed a fatal illness such as malaria would be able to control other diseases as well. Malaria is only found in desert and highland areas of impoverished nations due to climate conditions. Malaria transmission is likely to spread to higher elevations in India. If the temperature rises in certain locations, malaria transmission will be restricted in that area, resulting in more people losing immunity and, eventually, outbreaks in later years.

1.4.1. *Defending against infectious illnesses:*

When it comes to climate change, infectious illnesses are a serious worry. It would be difficult to combat a widespread sickness if it occurred during any dramatic event since it also becomes an epidemic and results in mass fatalities. The government should begin to invest in infrastructure health to combat these contagious illnesses. The population's health is directly influenced by its education,

health care, including public health protection. Infrastructure may have a significant impact in influencing a population's vulnerability and resilience. One health method, which is the most reasonable, is another way to combat the spread of infectious illnesses. This strategy necessitates collaboration across many disciplines and geographical boundaries to safeguard people's and the environment's health. Pathogens are responsible for more than 70percent of these illnesses, which are also connected to poverty (P. Sinha et al., 2018).

1.5. The Financial Aspect:

Changing climate is not only harming people's lives, but it is also posing a danger to the international economy. Extreme heat has had the potential to lower overall productivity. Hurricanes, typhoons, cyclones, storms, and other natural disasters have rendered countless people homeless and impoverished. Droughts result in poor harvests and hence a little quantity of food to sustain a rapidly growing population, which is predicted to reach 10 billion by 2050, as per the United Nations' World Population Review 2019. Climate change, according to the World Bank, might result in an additional 100 million people living in poverty by 2030 if nothing is done. To tackle this dilemma, we need private-public sector partnership as well as a shift in the way things are produced to achieve long-term economic development (The Phan et al., 2021).

The transmission of infectious illnesses has been impacted by global climate change in a variety of ways. Climate change, like many other influences on human health, exasperates existing inequities and problems in infectious disease management. It also raises the risk of new communicable diseases issues. Dengue fever, tick-borne illness, malaria, leishmaniasis, or Ebola are among the communicable diseases whose spread may be affected by climate change. Although research is ongoing, there is no concrete evidence that climate change is worsening or causing the spread of COVID-19.

2. DISCUSSION

There are many more elements of possible health hazards from climate change that have yet to be identified, the people of the twenty-first century must fight to better our environmental circumstances to maintain our treasured environment by making our future planet a happier place to live. Humans need a fresh model of human growth that is both reliable and efficient, as opposed to the current paradigm, which is unsustainable but also fails to provide fundamental human requirements. Environmental health consequences are projected to increase as a result of a variety of environmental factors. Changes in agriculture, environmental assets, such as freshwater, insects, and vectors, might have had a variety of consequences. Heat waves, changes in rainfall distribution, glacier melting, or sea ice are only a few of the natural effects of climate change that will endanger the lives of the world's people. As a result, numerous scenarios-based mathematical modeling may be utilized to offer us an idea of disease activity ahead of time using climatic data, which is obtained from both computer and illness models to provide both fields as well as lab data.

3. CONCLUSION

Ozone gas in the stratosphere is depleted as a result of global warming. It also has a variety of environmental consequences, such as extreme heat, vector-borne illnesses, respiratory disorders, allergy diseases, and developmental effects, among others. As a result, in terms of research and politics, humans need a much more global perspective. Humans need to investigate these occurrences but also come regarding sustainable or realistic solutions, sometimes using less hot water, driving less but instead using public transportation, planting trees, and ceasing to use CFC-based air conditioners, among other things. Adapting to a continually changing climate will be challenging with an ever-increasing population. Because we have finite resources on Earth, humans need human civilization to work together to achieve sustainability by forming partnerships between industrialized and developing nations that lack the means even for basic requirements, therefore benefiting one another. Humans must also be prepared to tackle any challenges posed by global climate change, which will have a detrimental effect on the economy. As a result, humans should employ more renewable energy sources or

shift our manufacturing practices to be more sustainable or practical. A human civilization that prioritizes the environment presents human needs, but also future generations' requirements will undoubtedly advance.

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