

Climate Change and Health Hazards

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Abstract

Climate change can often appear as a distant, abstract issue. Evidence of climate change is often presented in terms of long-term averages, such as the fact that the earth is currently, after accounting for natural fluctuations, 1.1°C warmer than the 1880-1920 average, or that India has warmed by about 0.8°C since 1901. Invaluable as the science has been and grave as these numbers are, abstract data often does not adequately communicate the impacts of these changes on people's lives. Overwhelming evidence shows that climate change presents growing threats to public health security from extreme weather-related disasters to wider spread of such vector-borne diseases as malaria and dengue. The impacts of climate on human health will not be evenly distributed around the world. The author attempts to analyse the health hazards due to climate change in the environment and how it really impact the lives of people to negotiate it in the already existed inadequate public health infrastructure as nearly 700 million of population living in rural areas directly depends on climate-sensitive sectors (agriculture, forests and fisheries) and natural resources (such as water, biodiversity, mangroves, coastal zones, grasslands) for their subsistence and livelihoods. Heat wave, floods (land and coastal) and draughts occur commonly. Malaria, malnutrition and diarrhea are major public health problems. The author also discusses that if there is any further increase in the climate change disasters, then it may cripple our inadequate public health infrastructure leading to urgent responding of situation, thereby by suggesting and exploring some response options to reduce the risk of climate change on the health of the people.

Keywords: Public health • Climate change • Environment • Health hazards

Introduction

Environment is a multi-dimensional include both external and internal features. It influences the development and growth of people, animal or plants; living or working conditions etc. Environment is composed of various elements. These elements may be explained as under: (1) Physical elements such as space, landforms, water bodies, climate soils, rocks and minerals. They determine the variable character of the human habitat, its opportunities as well as limitations. (2) Biological elements such as plants, animals, microorganisms and men constitute the biosphere. (3) Cultural elements such as economic, social and political elements are essentially manmade features, which make cultural milieu.

Environment is an important aspect in the creation of survival of various living organisms. It covers both biotic and abiotic components which help in protection, conservation and sustainability of various biological species and ecosystem. The survival of human beings also depends on environmental stability and its sustainability. In the recent types various researches have been carried out at national and international level to understand the nature and scope on relationship between human beings and the environment. The prime focus of these studies has been to analyse nature of changing occurring in the environment due to climatic and man-made changes. The existing

researches also evaluate the impact of environmental changes on human beings [1-4].

Methodology

Climate changes

Climate change is a global phenomenon related to change in the biological environmental condition of the planet. NASA's definition of climate change says it is "a broad range of global phenomena created predominantly by burning fossil fuels, which add heat-trapping gases to Earth's atmosphere. These phenomena include the increased temperature trends described by global warming, but also encompass changes such as sea-level rise; ice mass loss in Greenland, Antarctica, the Arctic and mountain glaciers worldwide; shifts in flower/plant blooming; and extreme weather events."

The global climate change relates to a shift in average weather conditions of the earth, including measures such as temperature, humidity, rainfall, cloudiness and wind patterns - and changes in the frequency or severity of these conditions. Although the Earth's climate has changed throughout its history, in cycles that occur over very long periods of time. This is a natural process.

In today's society we use the concept of 'climate change' to refer to the rapid changes in the climate that we have seen in the recent past not more than 50 years or so on. The changes in the global climatic conditions are a clear indication that these changes are not being driven by long-term natural climate cycles. Instead their main cause is global warming and the human activities that cause it.

Causes of climate change

Climate change refers to long term changes in global climate and it is a multi-dimensional phenomenon. It involves changes in average temperature of earth's climate. Climate change usually refers to the shifts in things like precipitation, wind patterns and temperatures over

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a given period. The changes in the temperature can happen anytime and it is manifested itself in the natural cycle of cooling and warming of earth's temperature. There are both natural and human causes responsible for climate change. The interaction of five main factors results in climate change includes Atmosphere (air), Biosphere (living things), Cryosphere (ice and permafrost), Hydrosphere (water) and Lithosphere (earth's crust and upper mantle).

The most significant cause of climate change is the changes in the greenhouse gases and diminishing earth's natural resources such as forest areas results in warming of earth's temperature. The electricity generation through burning coal, oil, or gas, which produces carbon dioxide and nitrous oxide - powerful greenhouse gases that blanket the Earth and trap the sun's heat and result in increase in earth's temperature. The manufacturing industry also produce emission through producing items such as iron, steel, electronics, plastics, clothes and other goods. Mining and other industrial processes also release gases, as does the construction industry. The manufacturing industry is one of the largest contributors to greenhouse gas emissions worldwide. The increase in the transportation facilities has also contributed significantly producing emission. Road vehicles account for the largest part, due to the combustion of petroleum-based products.

Climate change and health

It has now a globally recognized fact that climate change is adversely affecting the health of humans. The changes in the environment are rapid and affecting both social and environmental determinants of health viz; air, water, food etc. The major changes in the environment due to change in climatic conditions increase pollution and toxins in the environment. The global climate changes has also created challenges for food security and also increased the risk for people getting affected from various physical and mental health problems.

The changes in the climate are affecting the essential factors affecting the human health viz; safety of shelter, air quality, quality, safety and supply of drinking water, food availability and nutrition levels in food. According to the World Health Organization (WHO), researchers predict that certain effects of climate change will contribute to an increase of about 2,50,000 death between 2030 and 2050 from conditions such as: heat stress, malnutrition, diarrhea and malaria. The extreme climate condition also lays effect of mental health condition of people. According to the Centers for Disease Control and Prevention (CDC), the extreme heat waves have significant impact on increase in suicide rate and have negative effect on mental health conditions.

According to World Health Organization, the changes in the climate condition can also cause risk of infectious diseases due to change in the length of seasons and extreme climatic conditions like heavy rainfall, drought etc. The changes will directly increase the health risk of getting affected from water borne diseases and infectious diseases. The rise in the global temperature will also increase the risk of heatstroke, heat exhaustion, muscle cramps, worsening of existing conditions, such as respiratory and heart conditions and death. The changes in the temperature is critical for certain categories of people such as children, old age people, people affected from chronic diseases, socially isolated people etc. and pose a serious risk to health.

The change in the climatic condition can also cause increase in the air pollution and risk of allergies. The poor air quality can cause health issues such as asthma, chronic obstructive pulmonary disease (COPD), coughing and irritation of the throat, inflammation of the lungs, risk of lung cancer, airway congestion etc. The increase rate of carbon dioxide can cause increase rate of allergies from plants.

The expose to extreme climatic conditions also increases the level of toxins in the environment and can cause negative effect on neurological health. According to the National Institute of Environmental Health Sciences, scientists believe that environmental factors play a role in the development of both Parkinson's disease and Alzheimer's disease.

Climate changes and disasters

The rapid climatic changes are causing natural disasters have a great impact on the society. The sectors that are directly related with the sustainability of the society such as agriculture, tourism, water etc. are facing with the extreme challenges. In the past few decades the incidences of natural disasters have risen globally. The Intergovernmental Panel on Climate Change (IPCC) released a special report on extreme events and disasters in 2012. The findings of the report revealed that climate extremes are a natural part of the climate system; however "changing climate leads to changes in the frequency, intensity, spatial extent, duration and timing of extreme weather and climate events and can result in unprecedented extreme weather and climate events".

The rapid increase in the disasters such as intense floods, storms, droughts and heat waves has a direct link with the climate change. The available literature related to climate change and disasters also revealed the evidences of linking anthropogenic climate change with natural disasters. Climate change will therefore affect disaster risks in two ways, firstly through the likely increase in weather and climate hazards and secondly through increases in the vulnerability of communities to natural hazards, particularly through ecosystem degradation, reductions in water and food availability and changes to livelihoods

There have been effects of global warming on the climate of India. India is already a disaster prone area, with the statistics of 27 out of 35 states being disaster prone, with most disasters being water related. The process of global warming has led to an increase in the frequency and intensity of these climatic disasters. According to surveys, in the year 2007-2008, India ranked the third highest in the world regarding the number of significant disasters, with 18 such events in one year, resulting in the death of 1103 people due to these catastrophes. According to the Indira Gandhi Institute of Development Research, if the process of global warming continues to increase, resulting climatic disasters would cause a decrease in India's GDP to decline by about 9%, with a decrease by 40% of the production of the major crops. A temperature increase of 2°C in India is projected to displace seven million people, with a submersion of the major cities of India like Mumbai and Chennai.

Reducing the risk of disasters related to climate changes

It is extremely difficult to reduce the disaster related risk of climate change, owing to uncertainties associated with climate projection and diverse and rapidly changing communities. There are national and international forums continuously discussing and deliberating the mechanism to control the rapidly changing global climatic environment. The disaster risk reduction is the new strategy discussed globally to mitigate the effects of climate induced disasters. It can defined as "action taken to reduce the risk of disasters and the adverse impacts of natural hazards, through systematic efforts to analyse and manage the causes of disasters, including through avoidance of hazards, reduced social and economic vulnerability to hazards and improved

preparedness for adverse events". The disaster risk reduction offers a comprehensive basis for the developing countries to adapt to concrete risk reduction measures.

1. The disaster risk reduction strategy promotes that it should become national and local priority with support from institutional basis like creating a core ministry with a broad mandate including finance, economics or planning, to be responsible for mainstreaming climate change adaptation policies and activities.
2. It promote early identification, monitoring and assessment of disaster and creating an early warning system to mitigate its effects through activities such as disseminating high quality information about climate hazards and their likely future changes; conducting assessments of vulnerability and especially vulnerable groups; preparing briefings for policymakers and sector leaders etc.
3. It promote use of knowledge, innovation and education to build a culture of safety through activities such as disseminating good practices; undertaking public information programs on local and personal actions that contribute to safety and resilience; publicizing community successes; training the media on climate related issues; developing education curricula on climate adaptation and risk reduction; supporting research programs on resilience; and improving mechanisms for knowledge transfer from science to application for risk management in climate-sensitive sectors.
4. Measures can include incorporating climate risk-related considerations in development planning processes and instituting adaptation activities in plans for recovery from specific disasters.

The implementation of the above strategies will help to build

a consensus at both national and global level to develop a plan of action to reduce the risk associated with climate changes. The health related risk pertaining to changes in the global climatic conditions and environment. The strategies will benefit in sensitizing people related to health hazards and depleted natural resources.

Conclusion

The pace of climate change taking place at global level has posed challenges for survival and sustainability of human mankind. The health hazards related to global climate change have created threat for develop and underdeveloped countries. The changes in the environment have also created challenges for various natural resources like water, air, agriculture etc. According to World Health Organization projection climate change is expected to cause approximately 2,50,000 additional deaths per year, from malnutrition, malaria, diarrhea and heat stress in near future. Due to that the health infrastructure of developing countries like India is facing serious challenges to cope up with the changing situations. In such a situation it is extremely important to focus on the strategies to reduce the risk of climatic changes and its adverse impacts through developing it as priority agenda at both national and local level, identification and monitoring of disaster through early detection and also developing awareness among the masses through environment related educational programs.

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