

Committee: World Health Organization

Topic: The Question of Illnesses Caused by Climate Change

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Introduction

Climate change is one of the biggest health threats that humans have faced for years. The impacts of climate change include warming temperatures, changing precipitation, increasing frequency of extreme weather events, and rising sea levels. The problem is that these impacts threaten human health by affecting the food we eat, the water we drink, the air we breathe, and the weather we experience. According to the IPCC (Intergovernmental Panel on Climate Change), the world **MUST** limit temperature rise to 1.5°C by 2030, otherwise a number of catastrophic illnesses will occur due to climate change impacts.

Climate change is already negatively impacting human health in a myriad of ways: the lead to illnesses from increasingly frequent extreme weather events, the increases in zoonoses as well as vector-borne disease, the disruption of the food system, and mental health issues. But among those impacts, the most representative and serious one is the spread of disease caused by climate change. Many studies show the link between climate change and the increasing threat of vector-borne diseases, or those transmitted to humans and other animals by blood-feeding arthropods such as mosquitoes, ticks, and fleas. Cases of diseases caused by climate change include Lyme Disease, West Nile Virus, Dengue Fever, and Malaria. Experts claim that climate change increases the geographic range of vector-borne diseases due to the fact that as the average temperature becomes warmer, it results in longer warm seasons and shorter winters, creating conditions that might become more hospitable for many carriers of vector-borne diseases. Like this, climate change is closely associated with the rise of vector-borne diseases. Not to mention, climate change not only causes vector-borne diseases but also many other health-related illnesses and risks. In terms of the impacts due to the rise of temperature, this could lead to an increase in heat-related deaths as more frequent and longer heat

waves would occur. To be specific, exposure to extreme heat can lead to heat stroke and dehydration, as well as cardiovascular, respiratory, and cerebrovascular disease. In addition, climate change can also result in respiratory health effects by affecting the air people breathe, unhealthy levels of ozone, and water-related illnesses.

Experts say the world is not well-prepared for dealing with illnesses caused by climate change yet. Especially, people in low-income and disadvantaged (developing) countries and communities may be the most vulnerable to health risks due to climate change. However, climate change poses significant threats to health even in MEDCs (More Economically Developed Countries) or wealthy nations such as the United States. As a result, it has been a very significant task for the entire nations in the world to take measures and action for the prevention of the illnesses caused by climate change.

Definition of Key Terms

Climate change

Climate change refers to major shifts over the long term in the average global temperature, weather patterns, precipitation, wind patterns, and other climate indicators. Since the 1880s, human activities have been the major driver of climate change, primarily due to the burning of fossil fuels like coal, oil and gas.

Greenhouse effect

The greenhouse effect is defined as the way in which heat is trapped close to the Earth's surface by greenhouse gasses. By this greenhouse effect, the Earth gets to receive solar radiation, of which two-thirds are absorbed by the surface of the planet. And the remains are reflected back into the atmosphere, which is where greenhouse gasses function. The greenhouse effect plays a role in making the Earth habitable and warm. However, nowadays, human activities are changing the Earth's natural greenhouse effect, increasing the amount of fossil fuels and carbon dioxide into the atmosphere. Too much greenhouse gasses can cause the Earth to become extremely hot and result in many serious climate change effects.

Illness

Illness is defined as a disease or period of sickness that affects the body or mind. Due to climate change, a number of serious illnesses have been occurring.

Vector-borne disease

Vector-borne disease is a disease that results from an infection that is transmitted to humans and other animals by blood-feeding arthropods, such as mosquitoes, ticks, and flies. Examples of vector-borne diseases include Dengue fever, West Nile Virus, Lyme disease, and Malaria. Climate change is expected to affect the geographic and seasonal patterns of vector-borne diseases.

Background Information

Current situation of climate change issue

Currently, billions of tons of CO₂ are released into the atmosphere every year as a result of coal, oil, and gas production. And human activity is producing greenhouse gas emissions at a record high, with no signs of slowing down. According to a September 2019 World Meteorological Organization (WMO) report, humans are at least “one degree” Celsius above pre-industrial events and close to what scientists warn would be “an unacceptable risk.” In this situation, if people do not slow global emissions, temperatures could rise to above three degrees Celsius by 2100, causing further irreversible damages to our ecosystem. Those damages include increased and new illnesses, hotter temperatures, impacts on human health, and more. Especially in terms of illnesses, climate change is causing many different illnesses including infectious diseases which are also known as vector-borne diseases, temperature-related illnesses, air quality-related illnesses, and also water-related illnesses as they are highly connected to each other.

Climate change impacts on vector-borne diseases

In terms of vector-borne diseases, these are the illnesses that are transmitted by disease vectors, which include mosquitoes, ticks, and fleas. And these vectors can carry infectious pathogens, such as viruses, bacteria, and protozoa, from animals to humans. As climate change alters temperatures and weather patterns around the world, the risks of vector-borne diseases such as Lyme Disease, West Nile Virus, and Dengue Fever are increasing. Here are the ways how climate change affects vectors. Basically, when climate change occurs, many places that are suitable for vectors will be created. That

is because warmer temperatures increase the geographic spread of where vectors can survive and breed, and increased rainfall can also increase the amount of standing water, creating more breeding areas for many vectors. In addition, climate change is also improving the climatic and environmental conditions for the transmission of many diseases, which may lead to an increase in the duration of disease transmission seasons.

One representative instance of vector-borne disease is Lyme Disease. Lyme disease is a bacterial illness that can cause fever, fatigue, joint pain, as well as more serious joint and nervous system complications. Due to the fact that ticks thrive in temperatures above 45°F (7.2°C) and in more humid climates, a hotter climate contributes to an expansion of ticks' rates of survival, increasing the potential risk of Lyme disease.

Another case of vector-borne diseases is WNV (West Nile virus), which is a mosquito-borne zoonosis. In fact, as the world's average temperature has risen, the number of new U.S Lyme cases reported to the (Centers for Disease Control and Prevention) has nearly doubled since the early 1990s, to around thirty thousand each year. Climate change is broadly predicted to increase WNV distribution and risk around the globe, along with the similar reason to Lyme disease: increases in temperature accelerates mosquito and pathogen development.

Damages on human health by climate change

Climate change is already impacting human health. Changes in weather and climate patterns can put human lives at risk. Heat is one of the most deadly weather phenomena because as ocean temperatures rise, hurricanes become stronger and wetter, which can cause direct and indirect deaths to humans. Also, higher incidences of flooding can lead to the spread of waterborne diseases, injuries, and chemical hazards. Moreover, because changes in the climate affect the air people breathe, warmer temperatures and shifting weather patterns can worsen air quality, which can lead to asthma attacks or other respiratory and cardiovascular health effects. Not to mention, heart diseases, pest-related diseases, water and food-related illnesses are also included in health threats and effects by climate change.

Not only climate change is expected to affect physical health, it is also likely to affect mental health. In fact, a growing body of research links the impacts of climate change to adverse mental health illnesses, such as depression anxiety, Post-Traumatic Stress Disorder (PTSD), and substance abuse due to such things as property loss and displacement. In addition, according to Christine Manning, an

environmental psychologist at Macalester College, he stated that it makes sense that climate change would affect how we feel. As a result, it would also be a consideration to deal with mental health illnesses caused by climate change.

Past international agreements on climate change

One of the most representative international agreements on climate change is the Paris Agreement. On 12 December 2015, at the UN Climate Change Conference (COP21) in Paris, France, countries adopted the “Paris Agreement” in order to address climate change. In the agreement, all nations agreed to work to limit global temperature rise to well below 2 degrees Celsius, and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. This Paris Agreement provides an opportunity for countries to strengthen the global response to the threat of climate change. As a result, all nations are responsible for limiting greenhouse gas emissions.

Another international agreement is UNFCCC (UN Framework Convention on Climate Change), 1992 . Ratified by 197 countries, including the United States, it was the first global treaty to explicitly address climate change. This led to the establishment of an annual forum known as the COP (Conference of the Parties), for international discussions aimed at stabilizing the concentrations of greenhouse gasses in the atmosphere.

Possible solutions

Limiting greenhouse gas emissions

Limiting greenhouse gas emissions would be the primary step for the prevention of climate change. Climate change and greenhouse gas emissions are actually highly connected to each other. According to the World Health Organization (WHO), the main cause of climate change is the greenhouse effect. The term greenhouse effect is defined as a process that occurs when gasses in Earth’s atmosphere trap the Sun’s heat, making Earth much warmer. However, these days, due to burning fossil fuels such as coal and oil, the amount of carbon dioxide and other greenhouse gasses are increasing, resulting in an extremely hot temperature on the Earth. Because of this greenhouse effect, a number of climate changes including warmer temperatures and serious changes in weather patterns have occurred, and are currently posing many risks to human health.

Reducing the release of heat-trapping gasses like CO₂ can help protect humans' health by decreasing impacts on our climate systems. Activities that reduce the amount of heat-trapping CO₂ in the atmosphere include: active modes of transport like biking or walking that could help reduce traffic-related air pollution, planting trees, saving electricity, using renewable energy sources, or more.

Raising awareness of the UN Sustainable Development Goals (SDGs)

The SDGs (Sustainable Development Goals) are the blueprint to achieve a better and more sustainable future for all. They address the global challenges people face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice. As the UN SDGs are suggesting the most urgent issue to get solved as soon as possible, there are a number of sustainable goals related to climate change. In particular, SDG goal 13 (Climate Action) calls for urgent action to combat climate change and its impacts. One of the key promises to achieve SDG 13 is the Paris Agreement, which was adopted in 2015 (explained above). This agreement aims to keep the average temperature rise of the Earth below 2 degrees Celsius. In order to achieve this, here are the things that people could practice: recycling, walking or taking public transport, buying eco-friendly products, saving electricity, or more. Based on these sustainable goals, all nations must raise awareness of these goals toward people and they must take actions as well.

Increase in research for the prevention of diseases caused by climate change

Scientists state that more research should be done to understand the links between climate change and illnesses. Investing in stronger surveillance and data collection is necessary since they would allow researchers to recognize emerging diseases, better predict future hot spots, and illuminate which pathogens pose the biggest threats. Not to mention, investment in researching would help us predict and prepare for future climate scenarios that will impact disease outcomes. Moreover, accelerating vaccine development or treatments is also a way to prevent emerging diseases. Also, encouraging coordination between federal, state, tribal, and local officials to predict hot spots for new illnesses is essential so that the appropriate measures could be taken to protect public health.

Decreasing the risk of vector-borne diseases

The PHAC (Public Health Agency of Canada) and Health Canada recommended the following preventative measures that people could take to reduce the chance of a tick bite when traveling to

areas with risk of vector-borne diseases. These include: applying treatments of the insecticide to clothing to repel ticks, wearing light colored clothing, removing any found ticks immediately, and more.

Slowing the spread of these ticks is also very important. People are aware that ticks are spreading and will continue to do so in the near future under existing climate change. Therefore, taking measures to stop vector-borne diseases from spreading even further by such actions are significant. An example of the act involves mitigating the use of fossil fuels and the associated greenhouse gasses that cause climate change.

Major parties involved

People's Republic of China

According to the recent data from the Global Carbon Atlas, China is a country that releases the world's largest carbon dioxide in the atmosphere, with 10,668 million metric tons emitted in 2020. However, China is not really being supportive to overcome the climate crises. In addition, China is suffering from a number of climate change impacts. Average temperatures and sea levels have risen faster than global averages, and China has experienced severe floods and heatwaves, which are caused by climate change. Moreover, under the background of current severe climate change, the outbreaks and transmission of vector-borne diseases have proven to be impacted greatly due to rapidly changing weather conditions.

United States of America

The United States is the second-largest emitter of CO₂ in the world, with 4,713 million metric tons of total carbon dioxide emissions in 2020. As the climate change impact has become more severe, cases of 17 different vector-borne diseases have been reported to the Centers for Disease Control and Prevention. These reported cases of vector-borne diseases more than doubled from 2004 to 2019, to more than 800,000 cases. However, scientists and others warn that the United States is not fully prepared for those illnesses caused by climate change. Therefore, preparing and preventing future impacts due to climate change is needed.

Republic of India

India is the third-largest CO₂ emitter, with 2,442 million metric tons of total carbon dioxide emissions produced in 2022. According to a study, in 2022, India experienced its hottest April in 122 years. And it experienced extreme weather on 242 out of 273 days between January and October 2022. Due to these impacts caused by climate change, India is experiencing infectious diseases such as malaria, chikungunya, and water-borne illnesses. In terms of malaria in India, about 2 million confirmed malaria cases and 1,000 deaths are reported annually due to this disease. With this kind of seriousness of disease, India actually contributes 77% of the total malaria in Southeast Asia.

The Republic of Korea

South Korea is one of the countries that emits a large amount of greenhouse gasses. In 2020, the total volume of greenhouse gasses emitted in South Korea was found to be 656 million metric tons of carbon dioxide. As a means to reduce greenhouse gas emissions, Korea aimed to reduce greenhouse gas emissions by 37 by 2030, and is making efforts to subsidize electric vehicles, which use renewable energy. In addition, Korea is experiencing air pollution problems such as yellow dust and fine dust due to climate change.

The Commonwealth of Australia

Australia is currently experiencing higher temperatures, more extreme droughts, floods, and more extreme weather due to climate change. And climate-sensitive infectious diseases in the Torres Strait and Cape York region were identified as of concern in Australia by climate change: dengue, Ross River virus, melioidosis, and nontuberculous mycobacterial infection.

French Republic

In France, under a high emissions scenario, annual temperature is projected to rise by about 4.9°C on average from 1990 to 2100. And because of this temperature rise and heatwaves, an annual average of about 435,100 people are projected to be affected. For instance, last year, the 2022 summer was more difficult for France, due to a series of heatwaves and climate change effects. Moreover, France is facing a rise in cases of mosquito-borne viral diseases such as dengue fever, Zika and chikungunya, which would become more serious in the coming years.

The Islamic Republic of Pakistan

According to Germanwatch's Climate Risk Index, Pakistan is a country that is ranked as the eighth most climate-vulnerable country in the world. Although Pakistan is only responsible for 0.3 percent of global emissions so far, it is disproportionately and adversely affected by climate change through extremes in weather. In Pakistan, the climate crisis is primarily associated with temperature increases and heat waves, which are expected to cause an increase in the prevalence of respiratory and cardiovascular diseases, water-borne illnesses, and vector-borne illnesses like Malaria and Dengue.

People's Republic of Bangladesh

According to a 2018 USAID report, 89% of Bangladeshis (approximately 143 million) live in "high" or "very high climate exposure areas". And Bangladesh has been fighting the effects of climate change for decades, leaving it number 7 on Germanwatch's CRI(Climate Risk Index) for cumulative risk between 2000 and 2019. During this time, the country experienced 185 extreme weather events that cost a combined total of \$3.72 billion. These changing and erratic weather patterns and climate change have affected humans' health. To be specific, climate change in Bangladesh has started to impact health with increases in respiratory diseases, mosquito-borne diseases like dengue, along with deteriorating mental health conditions.

Arab Republic of Egypt

Egypt is one of the countries that is highly vulnerable due to climate change: heatwaves, sea level rise, increased soil salinization, rainfall retention, and desertification have occurred in Egypt. The problem is that the direct impacts of climate change on Egyptian public health may also include an increased prevalence of human parasitic diseases.

Timeline Of Events

Date	Description of event
In the 19th century	Scientists first argued that human emissions of greenhouse gasses could change Earth's climate

1937	One of the illnesses caused by climate change, WNV (West Nile Virus) emerged
7 April 1948	World Health Organization was founded and started to be concerned about climate change and illnesses
1975	One of the vector-borne diseases named Lyme Disease was first identified
End of the 1970s	The number of asthma has increased since 1970s, as climate change became more severe
12~23 February 1979	The first major world climate conference was held in Geneva
1988	WMO (World Meteorological Organization) and the UNEP (United Nations Environment Programme) established the IPCC (Intergovernmental Panel on Climate change) and became responsible for assessing science related to climate change
May 1992	Nations signed an international treaty, United Nations Framework Convention on Climate change
December 1997	The Kyoto Protocol, which is an agreement to reduce the amount of greenhouse gasses, was adopted
2003	Scientists started to link extreme weather to climate change
12 December 2015	The Paris Agreement, the agreement to take climate action, was adopted by 196 states at the UN Climate Change Conference (COP 21) in Paris, France
2016~Now	News of illnesses and issues due to climate change continue and raise concern

UN Involvement, Resolutions, Treaties and Events

- Human rights and climate change, July 2015 (29/15)

Written by the Human Rights Council, this resolution emphasized the urgency of continuing to address the adverse consequences of climate change for all. And called for a panel discussion and analytical study on the impacts of climate change.

- IPCC Summary for Policymakers 2018 report, 2018

The IPCC (United Nations' Intergovernmental Panel on Climate Change) examines the consequences of 1.5°C of global warming in this 2018 report.

- Human rights and climate change, July 2021 (47/24)

This resolution recognized that the rights of people in vulnerable situations were disproportionately affected by the negative impact of climate change. In this council, the Human Rights Council, it decided to incorporate into its annual programme of work, beginning in 2023, a panel discussion on different themes related to climate change.

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