



Climate Change and Natural Disaster: Impacts on Bangladesh and The Role of Health Professionals

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ABSTRACT

Natural disasters around the world are increasing in both frequency and intensity. There is a significant relationship between severe weather events and climate change. In Bangladesh, in recent years, the frequency and intensity of natural disasters have notably increased, which is attributed to climate change. Bangladesh itself contributes minimally to greenhouse gas emissions—the primary cause of climate change. Yet, if climate change or global warming continues unabated, the consequences for Bangladesh will be grave. It is time for everyone to become more aware of climate change and to learn and practice strategies for mitigating or adapting to its effects. Physicians—who enjoy unique privileges and authority in communities and have close contact with a wide variety of people—may have a crucial role in addressing this most important challenge of our time.

INTRODUCTION

On July 4th, flash flooding from the Guadalupe River devastated central Texas. The death toll from this flooding was 139, while the fates of many people remained unknown. The rapid and dramatic rise of the river's water level in Kerr County—26 feet in just 45 minutes—was unprecedented. It is widely believed that climate change contributed to this flash flood in multiple ways (The Texas Tribune, July 9, 2025). The 2021 IPCC report on 'The Physical Science Basis' stated that climate change was causing increase in the frequency and intensity of extreme heavy rainfall events and flash floods.

In 2021, more than 40 percent of Americans were impacted by a major natural disaster. In 2025, wildfires devastated California, Oklahoma, Minnesota, and Canada. According to Metaculus, as of June 9, 2025, 1.2 million acres have burned in the U.S. this year across 29,239 fires. Wildfires are burning in many parts of the globe—half of those recorded in the first half of 2025 occurred in Africa. Devastating wildfires have also occurred in North America and Asia.

According to *The Guardian* (July 9, 2025) and other media reports, Europe experienced its hottest June on record this year, with 2,300 heat-related deaths in 12 major cities—1,500 of which were attributed to human-induced climate change. Multiple countries in Africa are also experiencing severe drought conditions.

Disaster

A disaster is an event that affects a large population. The World Health Organization (WHO) defines a disaster as a “severe disruption, ecological and psychosocial, which greatly exceeds the coping capacity of the affected community.”

There are distinct categories of disasters based on their causes. Disasters may result from man-made accidental or technological events (e.g., an aircraft crash or power plant explosion), willful human acts (e.g., mass shootings, terrorism, or war), or natural occurrences—so-called “acts of God.”¹ Natural disasters include, but are not limited to, earthquakes, hurricanes, floods, tornadoes, heat waves, and tsunamis.

Climate Change and Global Warming

According to the Emergency Events Database (EM-DAT), which tracks global natural and technological disasters, the rate of natural disasters is increasing steadily. EM-DAT indicates that this increase is related to both natural factors (e.g., climate change) and human factors (e.g., population movements, unplanned urbanization, and deforestation).²

The terms *climate change* and *global warming* are often used interchangeably, but global warming is only one aspect of climate change. Climate change also includes rising sea levels, the loss of mountain glaciers, the melting of polar ice, and shifts in the blooming times of plants.³

In 2022, Earth's surface temperature was 1.90°F warmer than in the pre-industrial era. If this trend continues, the average global temperature will be 2.7°F warmer than pre-industrial era by 2030. Beyond that threshold, life will become much more difficult, if not unsustainable.

The year 2023 was the hottest on record since systematic record-keeping began—and each subsequent year may become even hotter. The main cause of global warming is the emission of greenhouse gases such as carbon dioxide, methane, and nitrous oxide. Fossil fuels—the primary energy source for daily living—are also the largest contributors to greenhouse gas emissions. However, they are not the only cause. Agricultural activities contribute about 10% of greenhouse gas emissions in the U.S., and an even greater percentage in agriculture-based economies such as Bangladesh. Rice cultivation alone is estimated to account for about 10% of global methane emissions.

Effects of Global Warming

We are already witnessing the effects of global warming. Rising surface temperatures are causing sea levels to rise through the melting of polar ice. Weather-related disasters such as tornadoes, cyclones, hurricanes, and floods are becoming more frequent and intense.

Because of higher temperatures and increased dryness, wildfires around the world are becoming more frequent, intense, and prolonged. Acute catastrophic events—such

as droughts, floods, and famines—are creating millions of displaced people worldwide. The number of *climate migrants* struggling to adjust to new environments, both within and across national borders, is growing rapidly.

According to EM-DAT, while the number of deaths from natural disasters has decreased due to better preparedness and prevention programs, the number of people injured or displaced by these events has increased.² These mass population movements—combined with poverty, hardship, and emotional distress caused by harsh climate conditions—can exacerbate political instability.

Climate Change in Bangladesh

Since 2000, the frequency of climate-related disasters in Bangladesh has increased by 46%. Bangladesh is often referred to as “ground zero” for climate disasters due to its low elevation and vulnerability to erratic precipitation and extreme weather events.⁴

If global warming continues unchecked, rising sea levels and coastal erosion could result in the loss of 17% of Bangladesh's land by 2050, displacing an estimated 20 million people.⁵ One study found that approximately 2,000 people from coastal areas migrate to Dhaka every day. This internal displacement is expected to intensify existing social and economic tensions.

The mental health impacts of climate change can be both direct and indirect. Direct effects include mood disorders, cognitive impairment, and increased aggression during heat waves.^{6 12} A single cyclone is estimated to raise mental illness rates by about 4%. Indirect effects arise from the stresses associated with poverty, unemployment, and displacement. Rates of depression, anxiety, acute stress disorder, and PTSD are expected to rise with escalating climate change.⁷

An increasing number of people—especially youth—report *climate anxiety* or *eco-anxiety*: distress about the anticipated catastrophic effects of climate change. A global survey found that 59% of young people were extremely worried about climate change, while 84% were moderately anxious.⁸ In Bangladesh, a 2023 study found that 6% of people aged 15–90 experienced climate anxiety—higher than the global average of 3.6%.^{13 6}

Bangladesh is among the world's least carbon-emitting nations, contributing only about 0.5%–1% of total emissions,⁹ yet it remains one of the most vulnerable to the effects of global climate change.

Role of Health Professionals in Combating Climate Change

Raising awareness and knowledge among the population is a crucial first step in mitigating the physical and psychological effects of climate change—or adapting to them. Teachers, community leaders, and healthcare professionals all have key roles to play. Physicians and mental health professionals, in particular, are on the front lines of responding to the human consequences of climate change.

Healthcare facilities are often the first to respond to the humanitarian needs of communities after sudden-onset climate disasters. They may also serve as places of refuge for people seeking medical care, relief, and access to resources during and after such events.¹⁰

Physicians may become aware of patterns of displacement, as migrants often move along established social networks of family and community members. Their presence in clinics or communities may signal broader migration trends. Moreover, health professionals—who command significant respect and authority, especially in South Asia—are uniquely positioned to educate high-risk communities about the health and social implications of climate change.

Future Directions

The good news is that people in Bangladesh are slowly becoming more aware of climate change and are working in various ways to adapt to or mitigate its effects. However, much more work is needed at both government and private levels.

The global goal is to limit the rise in average temperature to no more than 1.5°C by 2050. To achieve this, greenhouse gas emissions must be reduced by about 50% by 2030 and reach net-zero CO₂ emissions by 2050.¹¹ Many governmental and non-governmental organizations are actively working toward these goals.

It is imperative that everyone—individuals, communities, and institutions—take action to achieve these targets. Above all, we must become more aware, understand science, and recognize our rights and responsibilities during this global crisis that threatens the very existence of humankind.

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