

Climate change: A mounting public health menace in Ethiopia

Alemayehu Bekele¹, Mirgissa Kaba²

Globally, climate change has become one of the predominant public health concerns of the 21st century. There are diverse perspectives on climate change and the challenges it poses to society. Despite evident controversies the consequences of rising heat levels, steady and persistent variability in temperatures, alterations in the pattern of rainfall, continued environmental degradation, and an increase in the frequency and coverage of droughts and floods are evident (1). Forecasts for Ethiopia indicate that the amount of annual rainfall and number of rainy days will decrease in some parts of the country by 2080 (2).

Climate change has diverse undesirable consequences, including for the physical environment, human and animal wellbeing, and socio-economic and geo-political relations. Physical environmental examples of climate change include increased surface temperature, changes in precipitation, increases in the frequency or intensity of some extreme weather events, and rising sea levels due to melting glaciers and ice (1,3,4). The consequences of such changes include heavy precipitation that induces flooding; low precipitation combined with changes in temperature, resulting in drought; and heat waves.

The implications of climate change vary from country to country. Nonetheless, every country is affected by one or more outcomes of climate change. Available evidence reveals that the frequency of drought and flood and their geographical coverage have increased. These, among other consequences, has compromised food production and, coupled with conflicts, have contributed to the unprecedented displacement of people across the globe. Compromised natural resources pose social and economic problems that have become difficult to contain. Currently, the geo-political environment related to aid is precarious despite growing demands and concerns climate change generate to the internal security of the developed world (5).

There are multiplicities of factors causing and aggravating the magnitude of climate change worldwide: increasing population size, specifically in developing countries; the

expansion of industries emitting greenhouse gases and other noxious substances, to name but two. Poor national climate surveillance systems and weak adaptation and mitigation plans have worsened the situation. In connection with persistent population growth, there is an increase in demand for accessibility to public services: health, education, agriculture, housing, infrastructure, and water and electricity, in both rural and urban areas. Such demands leads to the over use of natural resources and subsequent vicious cycle.

Environmental pollution is another formidable challenge encountered with growing population size, including air pollution and the spill-over of toxic chemicals and contaminants into the immediate physical environment. These collectively may result in several consequences, including global warming and other direct health impacts, such as chronic non-communicable diseases caused by exposure to toxic chemicals and contaminants, e.g. respiratory diseases, skin diseases, allergies and cancer. The growing use of plastic bags and bottles are also playing major roles in environmental pollution and non-communicable diseases. In addition to its impact on human health, climate change also favors the occurrence of infectious diseases in the animal population, including livestock. Some of these infectious diseases are zoonotic (transmissible from animals to human beings). Another striking issue is that climate change impacts are gender-related, in that women are at increased vulnerability compared to men, as revealed by different scientific studies. (6)

Although health threats due to climate change have been relatively well documented elsewhere, the direct effect of climate change on human health in Ethiopia is not well documented (3). Available evidence indicates that climate change has facilitated human vulnerability to erratic heat waves, extreme weather, temperature and precipitation, which in turn affect access to clean air, safe drinking water, sufficient food and secure shelter. The health consequences of these are apparent, including widespread infections, air-, food- and water-borne diseases, and non-communicable diseases (7,8).

¹Ethiopian Public Health Association: Projects and Grants Management Department Director, Email: alemayehubekele2002@gmail.com, alemayehub@etpha.org

² School of Public Health, Addis Ababa University, Addis Ababa, Ethiopia, E-mail: mirgissk@yahoo.com

While the immediacy and degree of impacts may vary in terms of geographical setting, the response to health challenges in developing countries is compromised by limited financial and human capacities.

While Ethiopia produces a relatively small amount of carbon emissions— one of the main contributors to climate change —on the one hand the country is not immune to climate change-related challenges, and on the other it is still contributing to the depletion of climate wellbeing.

Research on climate change in Ethiopia is limited and uncoordinated. What evidence there is indicates that the country has suffered from repeated droughts, sporadic floods and widespread malnutrition, which are manifestations of climate change. Health impacts, such as vector-borne diseases, water-borne diseases, meningitis and air pollution-related respiratory diseases due to climate change are an increasing trend (9).

The relationship between malaria and climate variability in Ethiopia has been documented though not sufficiently (10). In a country where non-communicable diseases are also catching up with communicable and infectious diseases, the implication of climate change has yet to be studied.

Despite weak coordination of research and programmatic responses in Ethiopia, there are initiatives to enhance surveillance of climate-sensitive public health emergencies. The resources required to tackle such emergencies have been highlighted. However, there are gaps in scientific evidence, as well as gaps in using climate-related data to forecast various health problems and emergencies, and the surveillance system is not strong and comprehensive enough for early warnings and timely interventions. While there are comprehensive and transdisciplinary approaches ('one health') and initiatives to prevent and control the multifaceted effects of climate changes in Ethiopia, such interventions are at very infantile stages.

In as much as evidence on climate change-related public health emergencies has started with limited coordination between stakeholders, poorly coordinated actions and inaction are facilitating climate change. Among these are poor waste management practices on the part of individuals and institutions, and the lack of policies to address waste management.

Developing countries in general, including Ethiopia, should take proactive, coordinated and sustainable measures to generate evidence; use evidence to draw up policies and strategies; and implement programs with innovative approaches to develop resilience to climate change. Every citizen should take responsibility and be accountable for their actions that affect the physical environment, including the use of plastic bags, disposal of waste, and appropriate use of renewable and non-renewable resources. Materializing this requires government has to introduce policy and strategy on waste disposal as well as recycling of waste.

At its 30th annual scientific conference (25–27 February 2019), the Ethiopian Public Health Association, has brought policy-makers from the public sector, programs, the media and academia together to deliberate on challenges of climate change vis-à-vis environmental protection. The three days conference drew useful recommendations for policy makers, research institutions, the public at large and the media. Calls were made to different stakeholders. Accordingly, government to develop policy on waste disposal and to invite and encourage technologies to recycle waste; informed and empowered public to engage in environmental protection; media to consistently inform and advocate on challenges of climate change and what could be done and finally research institutions and universities to undertake interdisciplinary research to generate contemporary evidence for programming. The Public Health Professional Association has taken responsibility to track consequent changes and document.

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