

Chapter 1

The Social Effects of Climate Change on the Health Outcomes of Vulnerable Older Adult Populations in the Global Community

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ABSTRACT

As life expectancy rates continue to increase and fertility rates continue to decline globally in the 21st century, the demographics of aging populations are undergoing an unprecedented change that will have significant consequences for the health outcomes of older adults-at-risk. According to demographic data in a joint report authored by five federal agencies, 8.5% of the world's population is currently age 65 and older, a figure projected to double by 2050. This chapter presents an analysis of the impact of climate change on the health outcomes of aging populations worldwide. It examines how the collaborative efforts of the federal government and the public health system can be utilized to create policies and programs that can prepare aging communities to deal effectively with the health consequences of our changing environment.

BASIC FACTS ABOUT THE IMPACT OF CLIMATE CHANGE ON HUMAN POPULATIONS

The term climate change has received multiple definitions in the scientific literature. According to an article published in the science section of the Encyclopedia Britannica online by Professor Emeritus of Botany Stephen T. Jackson of the University of Wyoming, climate change is a process by which periodic changes in the earth's atmosphere interact with specific geologic, biological, and chemical forces to bring about an environmental modification that affects the way ecological systems function worldwide.

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Professor Jackson posits that the earth's atmosphere is a fluid system, the dynamics of which are in a continuous state of motion that precipitates environmental change. He notes that such adaptive changes to the system's physical properties and movement rate do not occur independently within the natural order but rather depend upon the scope of specific ecological forces such as solar radiation levels, speed and intensity of ocean currents, and global positioning of continental landmasses containing mountain ranges, forests, and desert regions that influence the quality of the atmospheric chemistry that controls the production of plants and other natural resources necessary for the health and well-being of human populations over time.

Jackson's studies and those of other like-minded scholars have raised considerable concern among environmentalists that the sustained effects of such rapid modifications in earth's atmosphere caused by human intervention will significantly influence weather patterns that affect global ecological systems. Professor Jackson posits that such artificially induced atmospheric disruptions will produce ecological changes that will have a substantial impact on all aspects of the environmental systems that sustain life on earth across the age spectrum. Ecological occurrences such as unstable regional rainfall patterns, the elimination of rainforests that protect air quality and the intensifying of solar radiation levels that damage agricultural production are all climate associated events destined to produce a devastating impact on the external environment that will increase the risk of adverse health and safety outcomes for older adults in world communities that are aging (Jackson, 2021).

Assessment data from environmental impact studies conducted by a group of scientists working for the Intergovernmental Panel on Climate Change formed in the 1980's provides a robust body of evidence that supports Professor Jackson's position on the potential dangers of environmental disruption to the health of global societies that are aging.

In a joint report published in 2003, members of the Intergovernmental Panel of environmental experts presented scientific evidence that highlights how decades of raw energy harvesting mitigated by human activity is fast becoming a powerful force for the modification of global climate systems in ways that transcend regional boundaries and transform the quality of life on earth. Climatologists argue that rising global temperatures precipitated by the build-up of carbon dioxide and methane gas emissions in the earth's atmosphere from fossil fuel and forest fire combustion is causing a greenhouse effect that is amplifying the adverse impact of climate change on the health of world populations. The investigators conclude that the continued advancement of catastrophic environmental conditions such as these will be the primary contributor to setting the stage for one of the worst ecological disasters in human history (Population Reference Bureau, 2001, WHO, 2003). Findings from a similar study conducted by Murtaugh and Schlax (2009) at Oregon State University further support the idea of a significant relationship between the rise in greenhouse gas levels and increased population density. Analysis of the data revealed that human reproductive choice patterns were the primary factor responsible for the heightened consumer demand for home energy use that is the main contributor to the excess of carbon dioxide emissions that cause global warming (Murtaugh & Schlax, 2009).

Ecological studies by the United States Environmental Protection Agency in 2017 substantiates the findings of IPCC environmental experts. EPA data suggests that decades of artificially induced changes in the natural balance of ecological systems are the catalyst responsible for the uptick in natural disasters and disease outbreaks destined to significantly affect the path of health outcomes of aging global populations. The data indicates that this series of catastrophic climate-related events is already in motion internationally and is destined to have a profound social impact on the health and safety outcomes of

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