

Environment, health, and safety

Global climate change and nursing's role

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GLOBAL CLIMATE CHANGE is creating many environmental challenges affecting nurses, our patients, and our practice. Nurses are in a position as educators, role models, and health advocates to positively affect this growing concern.

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the United Nations to evaluate and report on global climate change based on peer-reviewed scientific literature. The IPCC's most recent report concludes that climate change from human activity is "very likely."

"Greenhouse" gases (for instance, carbon dioxide, methane, and nitrous oxide) act to hold in the sun's radiation and warm the atmosphere. As a result of the buildup of excessive greenhouse gases in the earth's atmosphere, mostly through the burning of fossil fuels, warming of the planet has accelerated, resulting in climate change. Scientists almost universally agreed on this.

The IPCC projects that at the present rate of climate change, by the year 2100 temperatures will increase between 2 and 11° F (–16.7 and –11.7° C); sea levels will rise 7 to 23 inches, and weather extremes will increase. The IPCC report states that numerous long-term climate changes have been observed already, including "...changes in Arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves, and the intensity of tropical cyclones." These changes will have various effects on the planet's climate and, in turn, on human health. Some of these effects are evident and, to an extent, have already occurred. Others are more long-term.

Rising temperatures can increase mortality. Heat waves that occurred in France in the summer of 2003 resulted in 15,000 deaths. Vulnerable populations, such as the elderly (especially women), children, workers in "thermally stressful" occupations, and those with preexisting illnesses (primarily respiratory and cardiovascular disease) are most affected. Urban inhabitants may also suffer disproportionately from rising temperatures, particularly if they do not have air conditioning.

Warmer temperatures also increase the probability of drought. Drought conditions lead to concentrations of microorganisms and contaminants in water, causing loss of water supplies and spread of disease. Crop failure and wildfires also result from drought.

The spread of infectious disease related to climate change has been studied. Carriers of vector-borne diseases (such as those carried by mosquitoes and rodents) may survive or even thrive in warmer weather, spreading diseases such as malaria, West Nile virus, and dengue fever more widely. Populations that have not encountered these infectious agents before are more susceptible because they have not developed immunity. Water-borne illnesses, such as cholera, may also proliferate and spread. Again, the more vulnerable populations, such as the elderly, children, and immunocompromised persons, would suffer the most.

Rising sea levels due to water expansion and polar melting can cause coastal flooding, potentially affecting the 70% of the world's population that lives within 100 miles of coastlines. Tidal flooding can lead to increased salinity of water tables, destruction of shellfish beds, coastal erosion, contamination of aquifers, and destruction of agriculture in delta regions. Increased precipitation and stronger, more destructive hurricanes can also cause flooding. These severe weather events result in the displacement of populations, associated injuries, exposure to toxic contaminants, interruption of the food chain, and the spread of disease.

Indirect effects of climate change can be predicted. These vary depending on socioeconomic forces and political disruptions, but in general include migrations, malnutrition, mental health problems, violent death, and loss of livelihood. As mentioned, vulnerable populations will suffer the greater burden of climate change effects. In addition, although the United States produces 25% of the world's greenhouse gases, developing countries with fewer resources will probably suffer the effects disproportionately.

What will nursing's response be? ANA's *Principles of Environmental Health for Nursing Practice* puts environmental health concerns squarely in the scope of nursing practice. The first thing we need to do is educate ourselves; as health educators, we can teach each other and the community how to decrease carbon emissions and prepare necessary healthcare responses. By educating ourselves, we nurses—the most trusted professionals—can become reliable sources of information and advocate for sustainable policies and practices at the state and federal level and in our professional associations. ★

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