NOT-NR-23-018

NINR Request for Information (RFI): Advancing Nursing Research in Climate and Health

Issued by

The National Institute of Nursing Research (NINR)

Purpose

Since its establishment in 2021, the National Institutes of Health (NIH) Climate Change and Health Initiative has been supporting research to reduce climate-associated health threats across the lifespan and build health resilience in individuals, communities, and nations around the world, especially among those at highest risk to climate change hazards. The National Institute of Nursing Research (NINR) is an active participant in this NIH-wide initiative.
With its multilevel approach to improving health, its focus on individuals and communities, and its commitment to health equity [1], nursing science has a major role to play in understanding and mitigating the impact of climate change on health. NINR is exploring additional efforts in this area. Through this RFI, NINR is seeking comments and testimonies from the extramural scientific community, professional societies, and the general public regarding research gaps in which nursing research can make a difference and/or provide a unique perspective.

Background

There is international scientific consensus that climate change poses burgeoning threats to human health, with projections that health risks will increase significantly in the absence of action to limit global warming. Multiple factors—such as environmental and institutional context (e.g., changes in ecosystems, land use, and infrastructure conditions); social and behavioral context (e.g., age, poverty, education, and health care access); climate drivers (e.g., extreme weather, rising sea levels, rising temperatures); exposure pathways (e.g., poor air quality, extreme heat, reduced nutritional and water quality)–contribute to a variety of negative health consequences through complex interactions. The negative health effects associated with climate change exacerbate existing health disparities and fall disproportionately on populations that are under-resourced and/or experiencing poverty, communities of color, and others affected by structural racism and discrimination.

In 2021, the NIH Climate Change and Health Initiative was launched to support research to reduce climate-associated health threats across the lifespan and build health resilience in individuals, communities, and nations around the world, especially among those at highest risk to climate change hazards. NINR is an active participant in this NIH-wide initiative, which promotes transformative, transdisciplinary research to address health equity, intervention science, health effects research, and training and capacity building. The initiative addresses a broad range of direct [2] (e.g., heat-related illness and death; respiratory and cardiovascular conditions; food-, water- and vector-borne diseases; mental health impacts; poor maternal and birth outcomes) [3] and indirect (e.g., chemical releases into the environment, changes in air, water, and food quality and availability, population displacement, interruptions in health care access, other social determinants of health) [4] health effects of climate change. Within this landscape, NINR is seeking community input on research topics or research questions in climate and health in which nursing research can make a difference and/or provide a unique perspective.

Key Definition

Please note that the focus on the health effects of climate change is distinct from health effects from environmental exposure. Climate change-related health consequences are directly related to greenhouse gas emissions that are warming the planet; air pollution is an example of an environmental exposure that is not specifically associated with climate change.

Request for Information

This Request for Information (RFI) invites the scientific community, health professionals, professional societies, and the general public to provide comments on areas within the following or additional topics in climate change and health. Responses are welcome from associations and professional organizations as well as individuals.

How to Submit a Response
Submissions should be entered in the web-based form. Please add text in response to each question at the bottom of the corresponding section. Additional response documents may also be attached.

1. Social and Structural Factors that Contribute to Health Effects of Climate Change and the Mitigation and Adaptation Strategies to Counter Them

The health effects of climate change can be amplified by structural racism and associated policies. For example, marginalized housing practices (e.g., "red-lining") can increase climate change-related exposure to health hazards, such as extreme heat (e.g., urban heat islands, lack of adequate cooling and tree cover), worsened air quality [5], and flooding with accompanying toxic waste release. In addition, discriminatory distribution of services and resources, such as the absence of grocery stores with healthy food options and inadequate health care access, can compound the climate change-related exacerbation of chronic conditions [6]. On a broader scale, global and local food systems are in immediate threat from the effects of climate change (e.g., crop yields, marine health), which will increase nutritional insecurity [4]. Strategies to enhance the resiliency of disadvantaged communities in the face of climate change might include infrastructure enhancements to reduce flooding and heat islands and support cooling systems (i.e., strengthen the electric grid). Research to characterize negative effects of climate change and evaluate implementation of policies would provide important information for development of future policies and actions.

Potential topics

- Researching unintended health threats from climate mitigation strategies and policies in transportation, energy, agricultural, health care, and other sectors.
- Identifying health effects of climate change that are exacerbated by health disparities, poverty, and climate migration, and developing evidence-based solutions for them.
- Studying interventions to address social determinants of health that increase susceptibility to climate change impacts on health and/or modify the effectiveness of responses to climate-related events

- Studying the impact of climate change on health care access, health care systems (e.g., supply chains, infrastructure) and developing adaptations to health care systems (e.g., dialysis, chemotherapy, prenatal care, assistance for people with disabilities) in the wake of climate-related disasters (e.g., flooding, tornadoes, hurricanes, extreme heat, winter storms, wildfires).

Where can nursing research make a difference and/or provide a unique perspective regarding social and structural factors that contribute to health effects of climate change, and mitigation and adaptation responses?

ANA-NY Response:

Given the wide differences in needs between various communities, we recommend approaches such as community-based participatory research (CBPR) be utilized to develop and test interventions that build resilience and increase capacity in varying communities.

Special attention should be paid to the social, political, and environmental determinants of health as research is designed and carried out. Innovative models of care that address social and environmental determinants of health via community-based care should be explored, such as the Buurtzorg Model and the CAPABLE Program.

Nurses understand the importance of the environment on health. Nurses who provide direct care in the community, nurses in community-based organizations and not-for-profit advocacy roles can collaborate with nurse researchers to implement and evaluate evidence-based strategies to mitigate climate change effects on individuals and communities. Topics include:

- Research evaluating effectiveness and equity of post-disaster recovery strategies from climate change related natural disasters.
- Research on the impact of climate change on indoor air quality specifically for schools, workplaces, and homes that can support standards in these settings that promote health.
- Study the efficacy and effectiveness of behavioral interventions on mental health outcomes related to cumulative exposure to unhealthy living and working environments.
- Recognizing that environmental factors pose a threat to cultural preservation, it is critical that interventions be evaluated in this capacity to assess resilience and account for potential risks in cultural loss.

2. Individual, Population, and Community Factors in the Context of Climate Change that Create Associated Health Challenges and Relevant Solutions

In addition to policies and structural conditions that amplify the negative health effects of climate change in vulnerable populations, individual and community factors have a role. Some of these populations are less resilient and more sensitive to climate-associated effects, and communities have differing capacities to address climate-associated health risks [7]. A better understanding of these multi-level factors would contribute to the development of effective solutions.

Potential topics

- Evaluating how environmental exposures caused by climate change may influence an individual's health.
- Identifying interventions that can reduce negative health effects on population groups with disproportionate exposure to poor air quality.
- Creating communication strategies about the health risks of climate change in collaboration with community members and health workers.

Where can nursing research make a difference and/or provide a unique perspective about individual, population, and community factors regarding climate change that create associated health challenges and relevant solutions?

ANA-NY Response:

Evaluating the impact of increasing the knowledge base of nurses to understand the impact of climate change on health and the resulting integration of this in their patient teaching across all patient contacts can direct development of specific strategies that empower patients regarding effective self-care and the importance of mobilizing community-based efforts to achieve climate justice.

Education of individuals and communities relating health to impacts of climate-related events should include:

- Heat and smoke exposure.
- Fire-related soot and particulate matter exposure after wildfires or other natural or industrial accidents.
    - Educate and encourage populations at risk for wildfire hazards how to monitor air quality.
    - Educate and encourage populations at risk for wildfire hazards of the risks of exposure and strategies to respond in a timely and appropriate manner to minimize the risks.
- The changing risks for vector-borne diseases that result from climate change.
- Access to potable water and preparation for climate related disaster planning.
- Study the effectiveness of behavioral interventions and self-care strategies that can be implemented to support mental health over time and during disasters.

3. Opportunities to Counteract Negative Health Effects of Climate Change

As the health effects of climate change become more apparent, a wide range of participants from research, health care, public, and private sectors can contribute to the solution. Building awareness of health risks (particularly for vulnerable and underserved populations) among health care professionals, adaptation of environmental early warning systems [5], and modification of ongoing research programs present opportunities. Partnerships and collaborations across disciplines will enhance future endeavors.

Potential topics

- Investigating, developing, and testing approaches to prepare and build resiliency for those most affected by the effects of climate change (e.g., extreme heat, flooding, wildfires, drought).

- Studying the health co-benefits of climate-directed mitigation strategies associated within the built environment and infrastructure (e.g., urban planning, green spaces, cooling centers, enhanced public transportation options, improved agricultural practices, nutritional policies) on individuals and communities.

- Investigating the unique role that community health workers (including community nurses) can play in communicating the health risks of climate change, evaluating health needs of community members, and building cooperative health interventions with community members in the context of climate change effects.

Where can nursing research make a difference and/or provide a unique perspective regarding approaches to counteracting the negative health effects of climate change?

ANA-NY Response:

Nursing research must explore the effectiveness and sustainability of INNOVATIVE strategies used in all health care settings and integration of these into patient education:

- Reduction of single use devices/supplies in all setting.
- Reduction of plastics and replacement with stainless steel and other sustainable materials (while evaluating the financial burden and return on investment).
- Waste reduction.
- Support of a circular economy through reuse, reprocessing, and donations.
- **Reducing** the release of waste anesthetic gases into the atmosphere.
- Assessing certified registered nurse anesthetists' (CRNA) adoption of and leadership for decreasing greenhouse gas emissions associated with anesthesia (for example, eliminating desflurane and reducing waste from nitrous oxide).
- Reduction in the prescribing of metered dose inhalers.
- **Incentivizing** the use of electric vehicles, public transportation, and active transportation.
- Evaluating engagement in green teams, sustainability programs, and building a culture of climate-healthy practices.
- Integration of nurses within health care systems into community-wide emergency response teams.
- Identifying and assessing the effectiveness of nurse-specific actions to decarbonize health care..
- Educating nurses about the energy transition and measuring impacts they can make with employers, e**lected officials, organizations, and agencies**.
- Testing nurses' roles and effectiveness to promote reduction of the carbon intensity of meals served in health care settings (and/or communities) while reducing food waste and supporting regenerative agriculture.
- Nursing research can make a unique contribution by evaluating the use of **emerging** (generative Artificial Intelligence technologies and drones) and existing technologies (telehealth, electronic health records) in detecting and preventing climate change threats to populations and communities.

- **Nursing input is critical in the planning of healthy communities.**
    - As certain industries shift away from fossil fuels and toward renewable energy, community-wide disruptions are bound to occur with individual, family, and population effects on health and well-being.
    - These health impacts will be a key component of studies and the long-term energy transition strategy to ensure that all are prepared and able to adapt to changes.

4. Other Topics in Climate and Health Research

What are additional topic areas in climate and health research in which nursing research can make a difference and/or provide a unique perspective?

ANA-NY Response:

Support of protections for communities from climate change and environmental toxicants, championing policies that would rebuild the nation's public health infrastructure in preparation for national emergencies and natural disasters as well as prevent injuries and respond to infectious diseases

Nursing research may focus on working with communities to assess and evaluate their ability to respond to climate-related disasters with a specific emphasis on supporting people who live and/or work in settings that put them at higher risk of becoming infected or exposed to hazards.

- Research about nurses' effectiveness in roles as messengers, planners, and problem solvers could be an important contribution by broadening the outreach and consumer education for climate change.
- Nursing research is needed in **economic studies that evaluate the impact of climate-related events on individuals, families, communities, and governments.**
    - To assess the cost of climate-related events in relation to adverse health and mental health outcomes.
    - To assess the cost of lost productivity and wages; infrastructure and material damages; lost or reduced business; and tax revenue shifts.
- **Nurses' expertise is key in policy research** on climate change mitigation strategies related to:
    - Disaster preparedness, response, and recovery practices.
    - The impact of shifts and incentives toward renewable energy sources.
    - Effective strategies for building climate resiliency through the lens of equity.
    - The development and implementation of **public health initiatives and urban planning**.
    - The impact of community-specific factors that affect health, such as public transportation and average income levels to formulate a variety of mitigation strategies that can be implemented in different communities to be most effective.