2023 NIEHS EHSCC MEETING: Disaster Research Response & Climate Change & Health

We are inviting members of the NIEHS P30 Centers to present their disaster research response-themed or climate change-themed work at the October 2023 NIEHS EHSCC MEETING in Houston, Texas.

The leadership of each P30 Center is encouraged to nominate a member of their center to present at the October meeting. To participate, the nominated member should send an abstract of their work to the 2023 NIEHS EHSCC MEETING planning committee by completing this online questionnaire.

Up to four abstract authors will be invited as plenary speakers. Others will be invited to share their work during poster sessions.

Please submit your abstract by July 24, 2023. Plenary speakers will be notified by August 7, 2023.

Thank you - 2023 NIEHS EHSCC MEETING planning committee.

Response was added on 07/21/2023 3:40pm.

ABSTRACT AUTHOR'S CONTACT INFORMATION

Author's name (first name last name):	Perry Hystad (The abstract author is the prospective presenter)
Author's contact email address	perry.hystad@oregonstate.edu
Author's title	Associate Professor
Author's primary department & institution	College of Health, Oregon State University
P30 Center where the author is a member:	Pacific Northwest Center for Translational Environmental Health Research
The project PI/Lead	⊗ Same as abstract author ◯ Different from abstract author, if so, specify

PROJECT FOCUS

The primary focus of the project (you may select more than one option, if applicable)

☐ Disaster Research Response (DR2)
☒ Climate Change and Health (CCH)
☐ Other, please specify

The climate change and health issues (being) studied

☒ Exposure pathways (extreme heat, air quality, water quality/quantity, vector ecology, etc.)
☒ Vulnerability factors (demographic, biological, social determinants, geographic, etc.)
☐ Health system capacity & resilience - (governance, EHS workforce, health information systems, etc.)
☐ Stress response (pathways, psychosocial stress, eco-anxiety)
☒ Climate and geospatial modeling
☐ Other, please specify

PROJECT DETAILS - DR2/CCH AND HEALTH GAPS, PROJECT OBJECTIVES, FINDINGS, & LESSONS LEARNED

Study Title

PURE-Climate: Identifying and Adapting to Climate Change as a Modifiable Risk Factor for Human Health Globally

DR2- or CCH-specific research gaps that the project addressed/is addressing

Climate change is a major global health threat, particularly in low- and middle-income countries. However, limited epidemiological evidence exists outside of high income countries. The proposed research will establish a global climate-health study to assess the direct and indirect impacts of climate-driven exposures on human health using an existing global prospective cohort study. In addition, it will develop a framework for building resilience to climate change impacts on health in low-resource settings.

Project goals and objectives

This research will establish a global climate-health study to assess the direct and indirect impacts of climate-driven exposures on human health using an existing global prospective cohort study of 200,000 adults across 998 urban/rural communities in 27 countries. Aim 1 will determine direct impacts of acute climate-driven exposures (e.g. extreme temperatures, floods, storms) on diverse health outcomes (e.g. hospitalizations, CVD incidence, mortality) and determine vulnerability/resilience factors. We will quantify associations between acute climate-driven hazards and health outcomes using a case-crossover design and over a decade of prospective data collected for PURE individuals. Acute hazards will be assessed using state-of-the-art geospatial methods for each PURE community. Aim 2 will evaluate the indirect impacts of chronic climate-driven exposures on mortality and NCDs, determine pathways of influence, and assess vulnerability/resilience factors. We will apply long-term meteorological data and global climate re-analysis datasets to examine the indirect impacts of climate exposures on mortality and NCD incidence using prospective data collected in PURE. To further understand indirect pathways, adaptation, and vulnerly and resilience factors we will implement a climate-health survey to individuals living in PURE communities experiencing diverse climate-driven changes. Aim 3 will identify community-level opportunities and barriers for increasing climate resilience.

Research methods/approaches used

☒ Community-engaged research methods
☐ Communications research methods
☒ Field epidemiological methods
☐ Fundamental/basic science methods
☐ Other, please specify

Project stage/status:

◯ Project is ongoing - process findings available to present; no primary outcomes findings available yet
⊗ Project is ongoing - process findings and/or primary outcomes findings available to present
◯ Project completed - process findings and/or primary outcomes findings available to present
◯ No stage/status to report
◯ Other, please specify

Describe the process/primary outcomes findings from the project.

This grant is pending but preliminary analyses are available. For example, we have conducted preliminary analysis of daily temperature and mortality (up to 2018 follow-up, including 13,886 deaths). We observed an increased odds ratio of 1.30 (95% CI: 1.27, 1.33) for a one °C increase in daily temperature above the most frequent temperature (MFT) (as an indicator of the minimum mortality temperature (MMT)). For temperatures below the MFT we observed a decreased odds ratio of 0.94 (95% CI: 0.92, 0.96) for a one °C increase in daily temperature. When restricted to LICs these estimates were 1.42 (95% CI: 1.34, 1.51) and 0.92 (95% CI: 0.90, 0.95) for a one °C increase in daily temperature. The MMT is an important indicator to assess the temperature-mortality relationship and reflects human adaptation to local climate. Since MMT estimates are not available for most of LMICs, we used the most frequent temperature as a surrogate, which has shown good agreement with the MMTs. MFT shows large variation across PURE sites (range: 10-35°C) providing important variation for subsequent analyses.

Describe key challenges or lessons learned.

The PURE cohort is one of the largest ongoing global epidemiological studies and we have conducted a number of projects (e.g. PURE-AIR) that provide important lessons learned for building capacity for environment health research in LMICs. Since this grant is just beginning, we would like to receive input on key survey questions to assess indirect pathways linking long-term climate-driven exposures to health outcomes and factors influencing individual, household and community vulnerability and resilience to climate-health effects.

PROJECT SPONSORSHIP/SUPPORT

Project sponsorship (choose all that apply)?

☐ P30 inter-center collaborative pilot funding (via NIEHS)
☒ Other NIEHS - (NOT inter-center collaborative funding)
☐ NIH - other institutes (NOT NIEHS)
☐ Any other federal agency (NOT NIH)
☐ Non-federal government agency (state, local, etc.)
☐ Non-government, non-profit entity
☐ For-profit entity
☐ Insitutional (intramural) funding
☐ Project not sponsored
☐ Other, please specify