



## Short communication

## Climate change, migration, and health: Development of a case-based workshop for immigrant and refugee health professionals

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## ABSTRACT

**Introduction:** Climate change is contributing to unprecedented levels of migration with complex impacts on the health of displaced populations. Immigrant and refugee health professionals are well positioned to understand the issues at the intersection of climate change, forced migration, and health, and to participate in the development of solutions to this crisis. However, little has been done to equip these professionals to join the dialogue around climate change.

**Materials and Methods:** We developed an interdisciplinary, case-based workshop to introduce refugee and immigrant health professionals at an international conference to the ways in which climate change is impacting the health of the communities they serve. We employed a community organizing approach to show participants how their existing skills, knowledge base, and networks can be used to identify and mitigate climate impacts.

**Results:** The workshop was attended by approximately fifty participants. In a post workshop survey, sixty percent of participants agreed with the statement that the workshop would change their professional work, and there was a significant increase both in those who reported that they understood how climate change impacts immigrant communities and in how to use their relationships and resources to combat climate change.

**Discussion:** The discussion themes illustrated the breadth of knowledge of participants, especially regarding the social determinants of health, the health inequities that shape climate vulnerability, and myriad problem-solving processes.

**Conclusion:** This workshop offers one model for how a brief educational intervention using case-based learning and the tenets of community organizing can be used to introduce a new community of providers to climate change work.

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## 1. Introduction

Earth's climate is warming at an unprecedented rate, resulting in one of the greatest public health threats of the twenty-first century [1,2]. The changing climate creates direct and indirect impacts that threaten human health, from heat waves increasing cardiovascular disease to extreme weather events leading to displacement [3,4]. Though climate change impacts everyone, it disproportionately

harms under-resourced communities, communities of color, and the Global South, thereby exacerbating existing inequities [5,6].

Forced migration is a key example of how climate change is exacerbating existing inequities. Multiple climate-related factors drive migration, such as extreme weather events destroying infrastructure, heat and floods contributing to food and water insecurity, and sea level rise forcing low lying communities to relocate [7]. While migration is often an adaptive response to climate change [8], displacement can have significant negative impacts on health, including mental health, through a variety of mechanisms, such as disruptions in access to basic healthcare, exposure to new diseases, and economic instability, which in turn can result in food and water insecurity and violence, including gender-based violence [7–9]. The vulnerabilities associated with forced migration disproportionately threaten health

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in the most at-risk populations, further exacerbating existing health disparities [10–12].

Immigrant and refugee health professionals, with their background in the social determinants of health and cross-cultural care, are well positioned to understand the issues at the intersection of climate change, forced migration, and health, and to participate in the development of solutions to this crisis. However, little has been done to equip these professionals to join the dialogue around climate change. While there are general educational resources available to teach healthcare professionals about the impacts of climate change on health [13–15], none to our knowledge were specifically created for immigrant and refugee health professionals. Similarly, while a number of curricula on migrant healthcare are described in the literature, these do not address climate change specifically [16–19]. Training at this intersection can equip health professionals to both effectively care for their patients and to advocate for policy responses to climate change, including ending fossil fuel use and developing legal protections for climate migrants.

We developed an interdisciplinary, case-based workshop to introduce refugee and immigrant health professionals at an international conference to the ways in which climate change is impacting the health of the communities they serve. We employed a community organizing approach to show participants how their existing skills, knowledge base, and networks can be used to identify and mitigate climate impacts.

2. Methods

2.1. Setting & participants

We designed an in-person workshop to be featured at the North American Refugee Health Conference (NARHC), in Calgary, Alberta, Canada in July 2023. NARHC is the annual conference of the Society of Refugee Health Providers, an organization dedicated to improving the health and well-being of refugees and immigrants worldwide. Attendees are a mix of clinicians and trainees from a range of specialties, public health experts, and health policy experts with expertise in immigrant health. We asked workshop participants to share their professional backgrounds and whether they had prior experience with climate change work during a show of hands exercise at the beginning of the workshop, but did not otherwise collect demographic or professional data on the participants.

2.2. Structure of the workshop

The one-hour workshop consisted of a brief didactic session on five climate hazards: extreme weather, heat, vector-borne diseases, water and food scarcity, and air quality. This was followed by 20-minute, case-based small groups in which participants selected a group based on the climate hazard they wanted to discuss. Finally, we reconvened for a large group discussion and debrief in which one person from each group shared main takeaways. The schedule for the session is shown in Table 1.

Table 1 shows the structure of the one-hour workshop.

Table 1  
Structure of workshop.

Duration	Activity
15 min	Presentation: Introduction to the health impacts of climate change, with a focus on immigrant communities
20 min	Small group case study activity
25 min	Large group discussion and debrief

2.3. Development of cases

We developed a series of case studies highlighting the five climate hazards above that served as the basis for the small group discussions. We developed these cases from an interdisciplinary perspective using our backgrounds as physicians in Emergency Medicine and Internal Medicine and as experts in the intersection of climate change and immigrant health.

Each case was designed to highlight a common climate change-related issue and to explore how it amplifies existing health inequities and contributes to forced migration. The goals were to present climate change as a social determinant of health [20], to engage participants in problem-solving around this issue, and to demonstrate how their pre-existing skills in immigrant health could be utilized. We intended to show participants that they need not be experts in climate science to engage meaningfully in these discussions, and that their existing expertise allows them to play a valuable role in addressing the health impacts of climate change on their patients.

2.4. Community organizing approach

To structure the small groups, we designed discussion questions that asked participants to use their backgrounds to address the problem presented at multiple levels: individual, community, and health systems. The questions were based on the tenets of community organizing, a “leadership practice that enables people to turn the resources they have into the power they need to make the change they want [21]”, which has previously been used to prepare health professionals for health activism [22]. The questions asked the groups to identify available resources they could use to create the power needed to address these large, multifaceted problems [23,24]. In doing so, they highlighted the need for interdisciplinary, collective action to solve problems at the intersection of climate change and immigrant health.

The full text of the cases and discussion questions are available upon reasonable request.

2.5. Workshop evaluation

Workshop attendees were asked to complete a short pre- and post-survey rating their understanding of how climate change impacts the health of immigrant communities and how their relationships and resources can be used to combat the climate hazards impacting these communities. Participants were also asked on the post-survey if the workshop would change their clinical practice or professional work. Questions were scored on a five point Likert scale.

For the statistical analysis, responses were dichotomized with “strongly disagree,” “disagree” and “neutral” coded as disagree, and “agree” and “strongly agree” coded as agree. Two-sample tests of proportions were performed in Stata Version 18 [25] to compare pre- and post-survey results.

Additionally, two authors identified emergent themes from the large group discussion and categorized them into representative thematic groups.

2.6. Ethical approval

This workshop evaluation was determined to not constitute human subjects research by the Cambridge Health Alliance Institutional Review Board: CHA - IRB - 23-24-302.

3. Results

The workshop was attended by approximately fifty people from a variety of professional backgrounds, including learners in medicine (medical students and residents), clinicians from a variety of

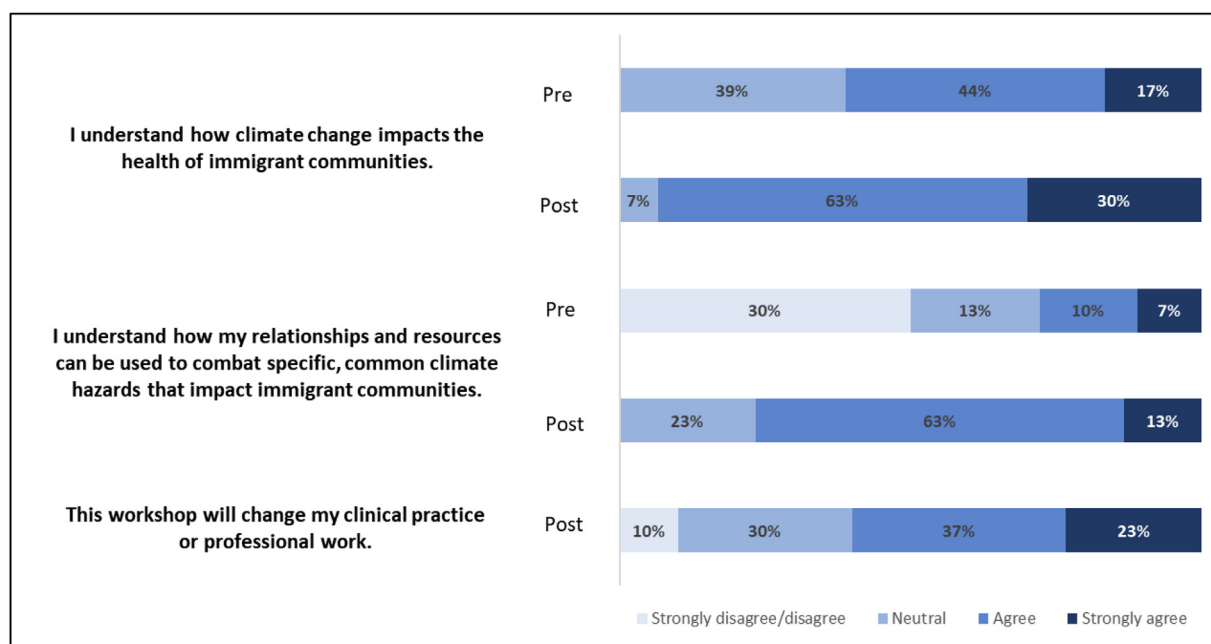


Fig. 1. Participant responses on the workshop pre- and post-surveys.

specialties, health policy experts, and others with expertise in immigrant health. A total of eighteen participants completed the pre-survey (response rate 36 %) and thirty completed the post-survey (response rate 60 %). Responses are shown in Fig. 1.

There was an increase of 32 % (from 61 % to 93 %) of those that reported they understood how climate change impacts the health of immigrant communities after the workshop compared to before ( $p = 0.0056$ , 95 % CI 0.080, 0.56). Additionally, there was a 59 % (from 17 % to 76 %) increase in those who reported they understood how to use their relationships and resources to combat climate change after the workshop ( $p = 0.0009$ , 95 % CI 0.23, 0.75).

The representative themes that emerged in the large group discussion are shown in Table 2.

Table 2 shows the representative themes that emerged in the large group discussion.

#### 4. Discussion

Through this brief intervention, we illustrate how a case-based workshop utilizing a community organizing lens can be used to

introduce refugee and immigrant health professionals to climate impacts on health and the ways in which their existing skills and knowledge can inform potential responses. The initial results show that participants had a statistically significant increase in their self-reported understanding of both the impact of climate change on the health of immigrant communities and how their relationships and resources could be used to combat climate hazards. Despite the brief nature of this intervention, 60 % of participants agreed that the workshop would change their clinical practice or professional work. The themes that emerged from the discussion illustrate the breadth of knowledge within this community of providers, especially regarding the social determinants of health, the health inequities that shape climate vulnerability, and the problem-solving processes that can be brought to bear on this complex issue. To our knowledge, this is the first piece in the literature to describe an intervention directed at engaging immigrant and refugee health providers specifically in climate change work. This workshop was also unique in the highly interprofessional nature of group, which included both clinicians at all levels of training and stakeholders from outside the health professions.

Strengths of this workshop include the interdisciplinary, case-based approach that draws on tenets of community organizing, which has previously been used to improve the motivation and self-efficacy of health professionals working on climate change [26]. Limitations included the brief nature of the intervention, the relatively small number of participants, the lack of demographic information collected on the participants, the variable response rates on the pre- and post-surveys and the fact that the surveys were not linked to participants. We also did not study knowledge acquisition or the long-term impacts of this intervention. Future research could employ this approach in a longitudinal format, such as an elective course on climate change for immigrant health professionals.

#### 5. Conclusion

While climate change is a complex threat to global health, it is also a unique opportunity for collective action across disciplines and geographic boundaries in pursuit of improving the health of the most vulnerable. This workshop offers one model for how a brief educational intervention using case-based learning and the tenets of

**Table 2**  
Representative themes emerging from the workshop's large group discussion.

Representative theme	Description
Understanding vulnerabilities	Importance of social determinants of health in governing the disparate vulnerability of communities to climate change (i.e. how existing disparities such as environmental racism and poor health literacy contribute to vulnerability).
Importance of diverse perspectives	Exploring interdisciplinary approaches involving diverse perspectives and buy-in, including the affected community and local and indigenous voices.
Solutions encompassing various stakeholders	Utilizing intersectoral approaches to solutions from the micro to the macro level, with community involvement throughout.
Addressing intergenerational trauma	Incorporating an understanding of intergenerational trauma when developing responses to climate impacts.
Healthcare advocacy	Using one's platform as a healthcare worker for diplomacy and advocacy around climate change.

community organizing can be used to introduce a new community of providers to climate change work.

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### Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Member of the Editorial Board of The Journal of Climate Change and Health - K.H. Peer review was handled independently of the editor involved and their research group. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### CRediT authorship contribution statement

**Eleanor H. Emery:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Conceptualization. **Tess Wiskel:** Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Kimberly Humphrey:** Writing – review & editing, Project administration, Methodology, Conceptualization. **Gaurab Basu:** Writing – review & editing, Supervision.

### References

- [1] The Lancet. A commission on climate change. *Lancet* 2009;373(9676):1659. doi: [10.1016/S0140-6736\(09\)60922-3](https://doi.org/10.1016/S0140-6736(09)60922-3).
- [2] IPCC. Summary for policymakers editors. In: Masson-Delmotte V, Zhai P, Pirani A, Connors SL, Péan C, Berger S, editors. *Climate change 2021: the physical science basis contribution of working group I to the sixth assessment report of the intergovernmental panel on climate change*. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press; 2021. p. 3–32. doi: [10.1017/9781009157896.001](https://doi.org/10.1017/9781009157896.001).
- [3] Cisse G, Kone B, Ba H, Mbaye I, Koba K, Utzinger J, et al. *Ecohealth and Climate change: adaptation to flooding events in Riverside secondary cities, West Africa* editors. In: Otto-Zimmermann K, editor. *Resilient cities: cities and adaptation to climate change; proceedings of the Global Forum*. New York: Springer; 2010. p. 55–7.
- [4] Romanello M, Di Napoli C, Drummond P, Green C, Kennard H, Lampard P, et al. The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels. *Lancet* 2022;400(10363):1619–54. doi: [10.1016/S0140-6736\(22\)01540-9](https://doi.org/10.1016/S0140-6736(22)01540-9).
- [5] Naylor A.W., Ford J. Vulnerability and loss and damage following the COP27 of the UN Framework Convention on Climate Change. *Reg Environ Change*. 2023 Feb 10;23(1):38. <https://doi.org/10.1007/s10113-023-02033-2>
- [6] UNEP. What you need to know about the COP27 Loss and Damage Fund, <http://www.unep.org/news-and-stories/story/what-you-need-know-about-cop27-loss-and-damage-fund>; 2022 [accessed 30 Oct 2023].
- [7] Pörtner H-O, Roberts DC, Tignor M, Poloczanska EC, Minterbeck K, Alegria A, et al. Intergovernmental Panel on Climate Change. Summary for policymakers editors. *Climate change 2022: impacts, adaptation and vulnerability*. Cambridge, UK and New York, USA: Cambridge University Press; 2022. p. 3–33. doi: [10.1017/9781009325844.001](https://doi.org/10.1017/9781009325844.001).
- [8] Schwerdtle P, Bowen K, McMichael C. The health impacts of climate-related migration. *BMC Med* 2018;16:1–7. doi: [10.1088/1748-9326/ab9ece](https://doi.org/10.1088/1748-9326/ab9ece).
- [9] Hunter LM, Stephanie K, Elizabeth F, Brian K, Andrea R, Alexis M, et al. Scales and sensitivities in climate vulnerability, displacement, and health. *Popul Environ* 2021;43(1):61–81. doi: [10.1007/s11111-021-00377-7](https://doi.org/10.1007/s11111-021-00377-7).
- [10] Raker EJ, Arcaya MC, Lowe SR, Zacher M, Rhodes J, Waters MC. Mitigating health disparities after natural disasters: lessons from the RISK Project. *Health Aff Proj Hope* 2020;39(12):2128–35. doi: [10.1377/hlthaff.2020.01161](https://doi.org/10.1377/hlthaff.2020.01161).
- [11] U.S. Environmental Protection Agency. *Climate change and social vulnerability in the united states: a focus on six impacts*. Report No.: EPA 430-R-21-003. Accessed 1 Oct 2023.
- [12] U.S. Global Change Research Program. The impacts of climate change on human health in the united states: a scientific assessment. Accessed 1 October 2023. Available from. doi: [10.7930/JOR49NQX](https://doi.org/10.7930/JOR49NQX).
- [13] GlobalChange.gov. Resources for educators, <https://www.globalchange.gov/browse/educators>; 2023 [accessed 1 Oct 2023].
- [14] Climate Resources for Health education. About - CRHE, <https://climatehealthed.org/about/>; 2023 [accessed 1 Oct 2023].
- [15] World Health Organization. Refugee and migrant health toolkit, <https://www.who.int/tools/refugee-and-migrant-health-toolkit>; 2023 [accessed 2023 Nov 7].
- [16] Warrens H, Jeyapala J, Blakeway H, Craig A, Tol I. Proposing a curriculum framework for refugee and migrant health for UK medical students. *Future Healthc J* 2024 Sep 27;11(4):100190. doi: [10.1016/j.fhj.2024.100190](https://doi.org/10.1016/j.fhj.2024.100190).
- [17] Gruner D, Feinberg Y, Venables MJ, Shanza Hashmi S, Saad A, Archibald D, et al. An undergraduate medical education framework for refugee and migrant health: curriculum development and conceptual approaches. *BMC Med Educ* 2022 May 16;22(1):374. doi: [10.1186/s12909-022-03413-8](https://doi.org/10.1186/s12909-022-03413-8).
- [18] Palnati M, Martinez AE, Audil A, Tovar E, Macfarlane P, Gerber M, et al. Simulation-based trauma-informed care education instills empathy and improves clinician practices towards refugee and migrant populations. *MedEdPORTAL* 2024 Dec 13;20:11475. doi: [10.15766/mep.2374-8265.11475](https://doi.org/10.15766/mep.2374-8265.11475).
- [19] Fitzgerald SN, Leslie KF, Simpson R, Jones VF, Barnes ET. Culturally effective care for Refugee populations: interprofessional, interactive case studies. *MedEdPORTAL* 2018 Jan 17;14:10668. doi: [10.15766/mep.2374-8265.10668](https://doi.org/10.15766/mep.2374-8265.10668).
- [20] Ragavan MI, Marciel LE, Garg A. Climate change as a social determinant of health. *Pediatrics* 2020 May;145(5). doi: [10.1542/peds.2019-3169](https://doi.org/10.1542/peds.2019-3169).
- [21] Leading Change Network, Marshall Ganz, New Organizing Institute, Peter Gibbs, Shea Sinnott. *Organizing Guide: people, power, change*, <https://commonslibrary.org/organizing-people-power-change/>; 2014 [accessed 2023 Nov 7].
- [22] Emery Eleanor H, Shaffer Jonathan D, Danny McCormick, Jessica Zeidman, Geffen Sophia R, Predrag Stojicic, et al. Preparing doctors in training for health activist roles: a cross-institutional community organizing workshop for incoming medical residents. *MedEdPORTAL* 2024;18:11208. doi: [10.15766/mep.2374-8265.11208](https://doi.org/10.15766/mep.2374-8265.11208).
- [23] Ganz M. *Leading change: leadership, organization, and social movements* editors. In: Nohria N, Khurana R, editors. *Handbook of leadership theory and practice: a Harvard business school centennial colloquium*. Boston: Harvard Business Press; 2010. p. 1–42.
- [24] Ganz M. Public narrative, Collective action, and power editors. In: Odugbemi S, Lee T, editors. *Accountability through public opinion: from inertia to public action*. Washington D.C.: The World Bank; 2011. p. 273–89. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:29314925>.
- [25] StataCorp. *Stata: release 18 [software]*. College Station, TX: StataCorp LLC; 2023 <https://www.stata.com/>.
- [26] Basu G, Stojicic P, Goldman A, Shaffer J, McCormick D. Health professionals organizing for climate action: a novel community organizing fellowship. *Acad Med J Assoc Am Med Coll* 2024;99(4):408–13. doi: [10.1097/ACM.0000000000005637](https://doi.org/10.1097/ACM.0000000000005637).