Emerging Roles of Health Care Providers to Mitigate Climate Change Impacts: A Perspective from East Harlem, New York

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Abstract

Professional associations of health care workers are issuing policy statements on climate change and health with greater frequency, calling on their members to act in their duty to protect and fulfill the right to health. These health care providers' perceptions of their roles in the intersection of climate and health, however, have not been well-studied. This article presents results from a qualitative study using focus groups conducted with health care providers serving the low-income, ethnic minority population in East Harlem, New York. The focus groups sought to identify and explore providers' perceived health threats of climate change, as well as their perceived role as frontline disseminators of information and detectors of disease for their patients. Extreme heat events were used to frame the discussion in each group. Three major themes emerged: 1) environmental awareness, 2) an "ecohealth" lens, and 3) heat and health vulnerability. The participants demonstrated their interest in playing a role in climate change adaptation by identifying at-risk patients and helping to tailor clinical care to better serve these individuals.

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Introduction

IN THE FIRST assessment report of the Intergovernmental Panel on Climate Change in 1990, health figured as one part of a general chapter on human impacts. By the fourth report in 2007, this had shifted dramatically: health was a stand-alone chapter with hundreds of references exploring the historical and future projected effects of climate change on health.[1] The United Nations Human Rights Council recognized this association in three resolutions (#7/23, 10/4, and 18/22) in 2008, 2009, and 2011 and a commissioned study (A/HRD/10/61) emphasizing that climate-related impacts have implications for the right to the highest attainable standard of health.[2]

Climate change affects health in numerous ways, through gradual warming trends as well as more frequent extreme weather events including droughts, flooding, and heat waves. In 2000, the World Health Organization estimated that health effects from climate change were claiming more than 150,000 lives per year, and the situation is expected to worsen in the coming decades.[3] Low-resource populations and low-resource subpopulations in high-resource countries are experiencing a disproportionate amount of health effects from climate change. Measured as Disability Adjusted Life Years (DALYs), both the total and per capita burden are an order of magnitude greater among the poor.[4] Other subpopulations identified as vulnerable to health impacts of climate change include: children, the elderly, women and girls, and indigenous populations.[5] In low-resource countries, the main burden to health from climate change comes from the exacerbation of existing problems such as childhood malnutrition, malaria, and diarrheal illness. In higher-resource countries, direct effects from heat waves and other extreme weather events are expected to have the greatest impacts on health through worsened air quality, but changing patterns of infectious diseases could also play an important role. The increasingly urbanized global population will also experience specific climate-sensitive exposures due to urban heat island effects and frequent proximity to coasts.[6] While climate change has been an area of contentious political debate in the US, approximately 83% of Americans believe that temperatures around the world are rising and weather patterns have become more unstable.[7] Indeed, increasingly hot summers throughout much of the US are now thought to be specifically linked to climate change.[8]

Physicians and other health professionals have duties to protect human health and fulfill the right to health. Increasingly, health professional associations are producing statements and reports regarding the importance of the climate and health connection. For example, the American Public Health Association published a guidebook in 2011 on the role of public health in climate change; the American Medical Association and the American Academy of Pediatrics have issued policy statements on climate change prevention and adaptation; and *American Family Physician*—the journal of the American Academy of Family Physicians—devoted most of their August 2011 issue to climate change and included a handout for patients.[9,10] Additionally, well-respected advocacy organizations are developing curriculum and policy stances to help mobilize health professionals.[11] These associations and organizations assert that providers can, and should, play an important role in climate change adaptation by identifying at-risk patients and helping to tailor clinical care to protect those individuals.

Despite this increasing activity, health care providers' perceptions and thoughts about their role remain little explored with existing work focusing mostly on public health officials.[12] This qualitative study identified and explored

providers' perceived health threats of climate change, as well as their perceived role as frontline disseminators of information and detectors of disease for their patients. We intended the findings to have implications for action-oriented climate health messages and direct provider training that could be used by the local department of health, in this case, the New York City Department of Health and Mental Hygiene (NYC DOHMH), to improve the capacity of health care providers to assist in reducing the negative health effects of climate change in vulnerable populations.

Methods

Twenty-eight individuals took part in one of five focus groups during June-August 2009. All participants were health care providers (defined as having face-to-face contact with individuals during a health care encounter) working at hospitals, clinics, or home health services in East Harlem, New York, a low-income, urban, ethnic minority community. The represented occupations included social workers, medical assistants, medical technicians, several classifications of nurses (Licensed Practical Nurse, Registered Nurse, and Nurse Practitioner), physicians, patient advocates, and child development specialists. Participants

were recruited by word of mouth in East Harlem. Focus groups were held in private meeting rooms at various health care establishments in the community. All focus groups were audio recorded and observation notes were taken.

Using extreme heat as a climate-related case study, the moderator's guide was designed to focus on four aspects of heat emergencies: context, causes of vulnerability, public health messages, and health care provider role (see Table 1). Participants were also asked to view public health print messages from the NYC DOHMH and to view and respond to a video excerpt from a *National Geographic* special on climate change impacts.

The research protocol was approved by the local institutional Program for the Protection of Human Subjects and informed consent was obtained from all participants.

Data analysis

Data from the focus groups included observation notes, audio files, and transcripts. We analyzed all data/ utterances using the grounded theory method and axial coding.[13] We examined our emerging theories about content, returning to the data looking for evidence, incidents, and events that supported or refuted the questions, and so verified

- Based on what you've heard about climate change or, what some people call global warming, what is it to you?
- What specific health risks related to climate change have you heard about?
- Who would you say are the types of people that are most likely to be vulnerable during heat waves?
- Are there other things that you would like to know or you think your colleagues should know about heat waves and climate change?

TABLE 1 Sample questions from climate change focus groups with health care providers

our understanding of the data. We considered each instance of similar content as an incident. New data was placed into either existing or new codes.

Major topics and sub-topics were initially identified and categories were adjusted and refined through repeated review of notes and audio recordings. Audio recordings were independently analyzed by three primary raters (two student assistants and one Co-PI) and reviewed by a third rater (other Co-PI) until >90% intercoder reliability was achieved. A descriptive summary was developed to represent the key content of each focus group. Themes were derived by clustering, or consolidating concepts based on frequency, saliency, and intensity, and immersion/crystallization.[14] These activities were performed until we achieved saturation of all major codes and concepts.

Results

Participants in all five focus groups believed unanimously that climate change is occurring and is the primary cause of extreme weather. All participants perceived a multilevel relationship between environment and health, grouping climate change with broader environmental degradation with which they were already very familiar. Additionally, participants demonstrated a highly attuned sense of their patients' vulnerabilities and easily identified the limited adaptive capacity of vulnerable populations such as seniors, socially-isolated individuals and those with health issues and/or mental illness.

Three major themes emerged from these five animated and engaged focus groups: 1) environmental awareness, 2) an "ecohealth" perspective, and 3) heat and health vulnerability.

Theme 1: Environmental awareness

Participants brought a wide and divergent list of evidence to support their unanimous belief that global warming is occurring and is a real threat to the planet and its inhabitants. They listed evidence or indicators of climate change that included: increased frequency of extreme weather, changes

in infectious disease patterns, and they used salient iconic images of nature, such as glaciers, or polar bear loss of habitat. The reported evidence for climate change fit broadly into three categories: extreme weather, exotic occurrences, and specific environmental/science images. Examples of weather included warming temperatures, local trends affected by the larger meteorologic systems, and recent weather patterns, such as strong storms, changing air quality, and droughts in other parts of the country. One participant said:

> I read a *New York Times* article about natural disasters, how they'll affect global security, think about world going awry, tornadoes everywhere, hurricanes, fights over food, worst case scenario in my head. They predicted this would happen 50 years from now.

These weather patterns were seen as a harbinger of worse events to come. These future events included ice caps melting and changing migratory or hibernation patterns of animals. One participant gave the example of, "geese that don't go home; whole cycle of life is interrupted," and, in general, a sense that the natural order was disturbed. Multiple participants expressed concern over these events.

Another participant noted, "For my baby, sea level will be different…islands in [the] South Pacific could be covered with water, different environment for the new generation, don't know the implications yet."

Participants often mentioned iconic and emotionally charged images when referring to climate change. These were 1) polar bears and other charismatic megafauna; 2) extreme local and global weather events. In fact, polar bears—as seen in documentary, television ads, and print material associated with climate change—were mentioned often, demonstrating the power of the media and its use of charismatic megafauna.[15] The familiar image of the polar bear and a melting glacier was top of mind for many, if not all, health care providers, and the similarities in their references demonstrate how images produced by the media largely color how

and what people think of climate change.

> I think of the polar bears, the icebergs are shrinking, the penguins don't have their… you know… the world is shrinking. And it's not for the good. We're losing our resources. Things are dying because of it. The polar bears and stuff…

> Those trees last week? Never seen that in my life. Scary. [Participant was referring to a storm that felled hundreds of trees in New York City's Central Park.]

One participant reported that President Obama made a big impression on her:

> I heard the president talk about it, being aware, and trying to do something about global warming. We have to do something about it now. That's the first president to—well, the first president I listen to—he's trying to do something about it.

Theme 2: Ecohealth perspective

We found that providers' perceptions of climate change as a public health issue are inextricably linked with their perceptions of larger scale environmental change and contamination, such as widespread pollution, deforestation, or fishery depletion. We refer to this theme as an "ecohealth" perspective. Examples included mosquitoes, air pollution, heat, and allergies. The providers frequently mentioned infectious disease in conjunction with health issues. One participant explained:

> You think about disease, El Niño, the rainforest, microbes grow faster, red tides…new diseases we haven't seen before.

Other examples of interrelated effects included changes in insect populations, such as mosquitoes and ticks, and subsequent change in the prevalence of West Nile virus or Lyme disease; harmful toxic exposures and air pollution impacting children's IQ; numerous environmental exposures and outcomes: sun and melanoma; smog and asthma/allergies; illness and missed work days/economic

consequences; food and water availability changes (drought impacts water supply and crops, causing changes in fish habitat and crop growth, effecting changes in availability of food sources).

Participants often reflected a view that everything is connected:

> We're in very deep trouble. We're changing our own system—we're changing everything.

> It's all related to the health of all of us. Food: nothing you can't connect with [climate change] —asthma, you name it—water, air, food, people's ability to breath, their pulmonary conditions, their heart conditions.

> Impacts on human habitat: "I think we're now seeing [resources] as being more affected—not just the animals, not just the forest. Resources.

> [Global warming is] pollutants, ozone layer, temperature, environmental problems.

> The kinds of plants that are going to grow or aren't going to grow, the Amazon, changes in air currents around the Earth, changes in water.

> Global warming makes the seas heat up. We're in trouble if we lose the ocean.

Theme 3: Heat and health vulnerability

All focus group participants understood the association between heat and health. The association between heat and the health of urban dwellers was particularly salient to these providers. They identified threats in various aspects of the built environment, including: a) living in low-lying areas/flood zones like much of the poor population of East Harlem; b) the lack of green spaces to offset high urban temperatures; and c) the prevalence of overcrowded railroad-style apartments with windowless bedrooms. Another group referenced the mental health impacts of heat, stating that the extreme weather keeps people "cooped up" and "tries patience." Another group referenced the historic 1995 heat wave in Chicago as a formative

experience in terms of coming to appreciate the danger of heat.

Although all participants perceived the risk of heat to health, they noted that their patients do not generally share their concerns. One group emphasized that their patients—and sometimes, their family members—downplay the significance of heat waves, rationalizing them as normal summer events.

Participants were asked to review and comment on the likely effectiveness of a NYC DOHMH brochure on heat emergencies. They generally expressed frustration at the explanation of heat events, and agreed that the information for vulnerable populations should be more linguistically and culturally appropriate and relevant to their patients' lived experience. They stated that messages such as, "Stay inside because of heat and poor air quality" were unrealistic and did not speak to the realities of their patients' lives. More specifically, participants explained that such a message doesn't take into account that, for their patients, the building stoop (outdoor steps to apartment) was often the safest place for families living in hot, crowded, non-air conditioned apartments.

Risk and vulnerabilities

Focus group participants consistently mentioned the risk factors of poverty, social isolation, and physical and mental illness.

Poverty

These providers made easy associations between poverty and low health literacy, limited fluency in English, being homebound, poor housing, along with actual or perceived lack of access to safe places (such as air conditioned areas during heat waves). Social isolation and mental and physical illness were also often identified as key risk factors. Referring to patients' responses to extreme heat events, one participant said that they are "not ready for it in terms of clothing or [built] environment."

When visiting patients' homes, the participants reported seeing "buildings that are jury-rigged for air conditioning because it gets so hot—all

[power cords] attached to one strip hanging from a ceiling" and, as health care providers, they "worry about electrical safety" or they see "railroad-type apartments… venting [hot air from] air conditioning into the hall" which creates secondary health threats related to heat as temperatures inside the hallway—often the sole means of egress—soar.

One focus group participant used the following example to stress the important role of economics: "One client believed her family members felt the air conditioning was too expensive, and she minimized the health threat of heat, having grown up in a tropical climate." Other focus group participants shared concerns about older individuals who had immigrated to the US from warmer climates and disliked the feeling of air conditioning, not realizing the potential danger of the heat. One health care provider described how reluctant some elderly patients were to visit cooling centers: "*Me quedo a la casa hasta que me muera,*" which means, "I'm staying home until I die."

Social isolation

Participants reported that social isolation poses a grave risk to patient safety during heat events. It crosses age categories and may not be readily apparent. For example, an otherwise healthy mother and baby could be made vulnerable during an emergency because they are socially isolated due to the mother being a newly arrived immigrant. An older individual, even if a long-term city resident, might have a specific condition such as vision loss that increases isolation. Providers cited a hypothetical example of an elderly person dying in a heat wave because the window would not open or there was no air conditioning. Lastly, the providers singled out otherwise healthy individuals with outdoor jobs who might be socially isolated in work environments without protective policies or supervisors who respect health risks from heat.

Co-morbid disease/mental impairment

Focus group participants were keenly aware of specific health problems that increase vulnerability to conditions like heat waves. Certain kinds of mental illness were singled out as a risk factor in

not being able to interpret or appropriately respond to public health messages. A number of the health care providers noted that certain medications could heighten risk during heat waves, and some said they already counseled patients taking diuretics to stop or cut back during high heat.

According to the participants, these risk factors all contributed to limited adaptive capacity: a lack of knowledge about risk, lack of access to information to lower the risk, and inability to act due to economic, mobility, or other restrictions.

Discussion

This qualitative study identified and explored providers' perceived health threats of climate change, as well as their perceived role as frontline disseminators of information and detectors of disease for their patients. Our specific focus was heat events. We found that all the providers in these focus groups clearly understood the multilevel relationship between environment, heat emergencies, and health. They demonstrated a highly attuned sense of their patients' vulnerabilities and easily identified the limited adaptive capacity of some populations. Additionally, they perceived climate change within the context of broader environmental degradation. Participants did not explicitly express climate change as a matter of human rights. However, these providers all work with the medically underserved, low-resource population of East Harlem, where social injustice is a pulsating day-to-day reality and could potentially be a highly resonant frame.

Right to participation

As stated, participants easily identified their vulnerable patients. Vulnerability is likewise causative and symptomatic of marginalized populations and exclusionary practices. Though equality cannot exist unless all relevant stakeholders have a voice at the decision-making table, vulnerable people are regularly left out of policy making discussions. Participation is a fundamental human rights principle, documented in most human rights documents. With respect to

environmental concerns, the Rio Document holds that "[e]nvironmental issues are best handled with the participation of all concerned citizens." This includes the responsibility of the state to ensure "appropriate access to information concerning the environment that is held by public authorities."[16]

By alerting patients to climate change and its health implications on the people and communities they serve, health care providers are readily disposed to undertake powerful positions as human rights advocates. Our focus group discussions yielded interesting insights about health care providers' level of awareness around climate change and the extent to which they already discuss it with those they treat. The results may help establish a baseline level of knowledge to help guide any potential interventions aimed at mobilizing providers to act as crucial links to information for underserved populations.

National professional health organizations are in agreement that health care providers will play an important role in climate change adaptation by identifying at-risk patients and helping to tailor clinical care to protect those individuals. In New York, there are already significant initiatives at the city government level around climate and health. The NYC DOHMH, along with a number of state governments, received funding from the Centers for Disease Control and Prevention in 2011 to improve activities related to climate change adaptation. The NYC DOHMH currently runs campaigns to inform the general public and health care providers about protecting vulnerable groups during heat emergencies, flooding during extreme storms, and other events potentially related to climate change.

In terms of messages from the NYC DOHMH, providers were more aware of action-oriented information (such as the availability of free air conditioners) than of general information guidance (such as fact sheets for health care providers on heat-related illness). In addition, the NYC DOHMH has met with success in using a detailing approach to communicate health issues to providers in the field. This approach follows the model set by pharmaceutical companies, who visit clinics in person to provided tailored information

about a medicine. This focus group methodology models such an approach by exposing providers to resources while engaging them in substantive discussion about only a partially familiar topic. The participants expressed appreciation for the health and resource information regarding the severe health effects of extreme heat events, particularly in the context of climate change. While few participants had expressed specific awareness of the professional agencies' call to action, they already demonstrate ongoing flexibility and responsiveness to their patients' evolving needs. These practices could be further enhanced by targeted public health messaging and training for health care providers.

We discussed climate change with 28 health professionals in five focus groups. As with all qualitative methods, no claims can be made as to the representativeness or generalizability of our findings. More focus groups would have allowed for greater saturation of themes. Another possible limitation of this methodology was the decision to recruit heterogeneous groups in terms of professional roles. As an initial examination of health care providers' perceptions, we are therefore unable to draw conclusions about the perceptions of specific types of providers, such as physicians or nurses.

We believe the utility of these focus groups is found in demonstrating an interest and receptivity of health providers to the topic of climate change and public health. This topic was salient and providers were engaged in discussing the environmental problems and the local health impacts. These New York City-based participants appeared to see their role in terms of adaptation to climate change as distinct from that of the public health department or broader government services. Overall, they were already supporting the clear public health messages when those messages were consistent with their patients' needs and situation. There are both climate change adaptation and general health promotion opportunities for public health departments in collaborating with health care providers to 1) better inform the public health programming around climate adaptation about specific needs of vulnerable populations and 2) develop messages relevant to clinicians that translate global climate trends into locally relevant and contextualized health impact messages. Additional research should focus on specific public health communications from departments of health or relevant governmental agencies working on climate change and health adaptations in order to both test the effectiveness of these messages and more fully explore how to capitalize on the prevalent ecohealth perspective that health care providers demonstrated.

Health care providers already serve as strong advocates in terms of reducing environmental health risks—whether it is by promoting tobacco cessation with individual patients or advocating for access to healthier food at the policy level. Their role is critical not only in improving the health and quality of life of their patients and family members, but also in reducing health system costs. The public health community could learn from the clinicians' intimate knowledge of their patient populations and leverage the clinicians' status as integrated members of the community in order to reduce health risks and save lives during heat emergencies and other climate change related events. Clinicians' involvement is an important component of a larger scale initiative that is needed. Ultimately, climate justice in low-resource subpopulations within high-resource countries will depend on mobilization of multiple sectors—including health care services and public health agencies—to reduce inequitable impacts.

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