

VIEWPOINT

Climate Change and Health Adaptation: Consequences for Indigenous Physical and Mental Health

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INTRODUCTION

Low socioeconomic status contributes to poor health in disadvantaged populations globally.¹ Poverty, limited education, poor diets, and higher exposure to other health risks are accepted as contributing factors. That these factors also impede physiologic and social adaptations to novel health stressors is less widely recognized, but will affect how humanity copes with the increasingly important health stressor of climate change. This viewpoint proposes a typology of health adaptations: physiologic, personal and household, and community- and state-level adaptation. This framework is used to examine likely effects of climate change and adaptation on the health of Indigenous Australians, a group with low socioeconomic status that shares many traits with other Indigenous people globally.

CLIMATE CHANGE AND HEALTH IN AUSTRALIA

Climate change is increasingly accepted as the greatest threat to public health in this century,¹ and without substantial and rapid efforts to mitigate greenhouse gas emissions and the destruction of carbon sinks, climate change is predicted to diminish health in Australia. According to 1 framework, primary health effects are those in which the changing climate directly affects individual health.² In Australia, this will include increased morbidity and mortality during heat waves, which are set to become more frequent and intense and contribute to worsening bushfires.³ Australian bushfires are lethal, with 173 killed in the Victorian Black

Saturday bushfires of 2009. Beyond the death toll, bushfires traumatize far more people than they physically injure, including those who lose their homes or are forced to put down burned livestock.⁴ Secondary effects are ecologically mediated and in Australia could include increased geographic range of dengue transmission and some other mosquito-borne diseases.³ Hotter temperatures facilitate the spread of some bacteria and will likely elevate associated rates of food poisoning.³ Tertiary effects, such as increasing food prices, operate via social and economic pathways and may have the greatest potential to disproportionately burden the socioeconomically disadvantaged.

TYPOLGY OF HEALTH ADAPTATION TO CLIMATE CHANGE

Physiologic adaptation includes short-term changes to maintain homeostasis in the face of changes to weather, such as sweating when it becomes warm or shivering to generate additional body heat in the cold. There is also evidence for long-term changes in an individual's capacity to function while exposed to particular stressors, such as high temperatures.⁵

Personal and household adaptation includes changed personal behaviors ranging from decisions to avoid an extreme weather event by staying indoors to permanent migration. This can extend to changed habits, such as driving rather than walking to work to avoid heat. Personal or household acquisition of technology is another example of this sort of adaptation, including alterations to building design and construction to cope with heat.⁶ When comparing ethnic groups, as in this viewpoint, personal and household adaptation can

be amalgamated, although they should be examined separately when comparing adaptive capacity between sexes or age groups.

Community-level adaptation is more salient in some contexts than others, depending in part on the importance of community as a cohesive social entity capable of adaptation. It can include changed patterns of livelihood for its members as old systems become unfeasible or obviously unhealthy.

State adaptations range from enhancing surge capacity in emergency rooms during heat waves to improving social welfare programs in ways that indirectly promote health, thereby enhancing physiologic adaptive capacity. All forms of adaptation vary both in the extent to which they relate directly to health and the extent to which they are consciously understood as responses to climate change.

Maladaptation to climate change is also possible and can reduce future options to adapt, entail high opportunity costs, diminish incentives to adapt, or selectively encumber the most vulnerable.⁷ The risk for maladaptation increases in conjunction with power and information differentials. Higher levels of social organization, such as the state, tend to have greater differences in power and information access, and may be at higher risk for maladaptation than lower levels.

One insightful definition of maladaptation includes only those policies and actions explicitly meant to address climate change.⁷ However, ideas, policies, and actions may have adverse consequences in the face of climate change even when they are developed in response to circumstances other than climate change. These “oblique maladaptations” are wide-ranging and include, most basically, people’s lack of acceptance, awareness, or understanding of anthropogenic climate change. Their pervasiveness makes them important. From a health perspective, they include policies that diminish access to healthcare or nudge people toward less healthy dietary choices that in turn inhibit effective physiologic adaptation to heat stress.

Enhanced adaptive capacity at one level diminishes the need for adaptation at other levels. Conversely, populations less well served by state and community adaptation, or disproportionately affected by community and state maladaptation, have a greater need to adapt at the personal and household level. Often, these populations also have reduced physiologic adaptive capacity, further heightening the need to adapt at the personal and household level and potentially requiring costly adaptive trade-offs.

INDIGENOUS AUSTRALIANS

Following colonization, dispossession, and campaigns to eliminate Indigenous culture through a policy of assimilation, the situation of Indigenous Australians is characteristic of many minority populations worldwide. Indigenous people have a life expectancy that is about a decade lower than other Australians and have higher child mortality rates.⁸ Recent public bipartisan support and substantial investment in closing the gap in Indigenous disadvantage have coincided with modest gains in some areas, although other disadvantages remain unchanged or have worsened, including disability and chronic disease.⁸

Indigenous Australians are at particular risk from climate change,³ in part because of demographic characteristics. Although most Indigenous people live in major cities or regional areas, they are nevertheless overrepresented in remote parts of Australia, where many live in small, poor, and isolated communities. Furthermore, they are a younger population than Australians generally, meaning that the progressively worsening effects of climate change will disproportionately affect them.

Many Indigenous people conceptualize health differently from other Australians. The personal, social, and ecological are closely interconnected, and health is the state in which they are all in balance. Indigenous people are deeply connected to “country,” the place with which they have spiritual ties and to which they have traditional material rights.^{9,10} Connection to country is essential for cultural continuity and good mental health. Ecological disruptions are viewed as personally and socially harmful.¹⁰ Climate change will upset myriad spiritually significant ecological rhythms and relationships. This will challenge traditional cultural practices, including food procurement activities, by altering the ecosystems that are understood via traditional culture.¹¹ This will both hinder sustainable exploitation of the natural environment and diminish the relevance of traditional culture.

Despite its commitment to closing the gap in Indigenous disadvantage, the Australian government recently abolished its carbon tax—a strong climate change mitigation measure. Its current Emissions Reduction Fund is condemned by experts as unlikely to achieve even the relatively modest target of a 5% emissions reduction by 2020.¹² Regardless of intention, the government is helping to shape a future in which adaptation plays a major role in humanity’s response to climate

change, perhaps even eclipsing the role of mitigation. A shift away from mitigation toward adaptation can also be seen internationally.¹³

In this context, adaptive capacity to improve the health of Indigenous Australians is critical. However, examination of future adaptive capacity indicates reliance on adaptation to climate change is likely to exacerbate health inequity between Indigenous and other Australians compared with a future without climate change.

Physiologic Adaptation. Physiologic adaptation to climate change is limited by poor health. Heat stress is an example. Indigenous people have higher rates of obesity and overweight, and smoke at more than twice the rate of other Australians.⁸ Furthermore, conditions of poverty, poorer education, and increased rates of remote residence, where fresh food can be difficult and expensive to obtain, mean that many Indigenous people struggle to achieve a healthy diet.⁸ This risk profile enhances their likelihood of developing cardiovascular disease and diabetes, from which they suffer at higher rates than other Australians. Both these diseases decrease capacity to tolerate higher temperatures.⁶

Personal and Household Adaptation. Poverty and lack of education also impair the capacity of Indigenous people to adapt to climate change at the personal or household level. Some adaptations, such as retrofitting houses with insulation or installing air-conditioning, are beyond the means of some Indigenous people. Geographic isolation will compound the challenge and expense of adaptation.

Community Adaptation. For most Australians, community apart from the state is not an important economic or decision-making unit. For some Indigenous people, however, community is a critical adaptive unit. In some instances, this could provide an adaptive advantage; however, it can also have drawbacks if communities make maladaptive decisions. Before colonization, community-level adaptation allowed successful exploitation of some of Earth's most challenging and variable environments. Traditional culture was structured to allow orderly adaptive responses to these changing environmental conditions, fostering useful adaptation.¹⁴ Its operation was in many ways similar to current state-level adaptation to environmental stressors for other Australians, although the smaller number of people, less hierarchical social structure, and intimate spiritual connection with country may have reduced the risk for maladaptation.¹⁴

However, after a history of colonization, some Indigenous communities do not operate in a way

that best preserves the health of their members, with the incidence of alcohol-related trauma among the Indigenous population in the Northern Territory the world's highest.¹⁵ If, as argued here, climate change will erode traditional culture, this would likely reduce Indigenous communities' capacity to respond to environmental perturbations effectively. This would occur through 2 pathways: diminishing the importance of community as a decision-making unit, and lessening the capacity of community to respond to change in an ordered way, meaning responses would be more likely to be maladaptive.

State Adaptation. State-level adaptation is likely to further disadvantage Indigenous Australians compared with other Australians, even if Indigenous people receive a disproportionate amount of government spending. The geographic distribution of Indigenous people makes them harder and more expensive to service. Per-capita costs associated with primary health care rise with increasing remoteness and decreasing community size.¹⁶ To the extent that money and power enhance lobbying capacity and influence of government policy, the needs of Indigenous people may be overshadowed by those of other groups.

HEALTH AND CULTURAL TRADEOFFS

Indigenous Australians will be limited in their physiologic adaptive capacity and are unlikely to benefit from state-level adaptation as much as other Australians. This will heighten pressure to adapt at the personal, household, and community levels, despite low adaptive capacity at these levels. This combination will likely lead to adaptations that are costly trade-offs, in which highly valued cultural practices and relationships are sacrificed out of necessity. These "high regrets" adaptations are at the opposite end of the spectrum from "no regrets" adaptations that entail making changes that are beneficial regardless of climate change. Movement away from "country" is a possibility, especially in already harsh environments. Relatedly, climate change could diminish the sustainability of traditional food sources, leading to increased utilization of unhealthy, processed foods. Both of these developments would increase reliance on the cash economy and diminish the importance of community as a decision-making unit. However, potential benefits of increased participation in the cash economy, such as formal insurance, are unlikely to be realized without access to better education and jobs. All of these developments would further erode traditional

culture in favour of cultural homogenization. This, in turn, could harm social and emotional well-being, which a culturally strong environment may protect.⁹

This does not mean, however, that all adaptation should be discouraged. Some additional change is already built into the climate system, and humanity is unlikely to stop its emission of GHGs in the next several decades. Smart adaptation will be necessary. If implemented well, adaptation policies and programs aimed at Indigenous and other vulnerable Australians could improve their overall health status compared with a counter-factual world without adaptation. However, even smart adaptation will not be enough to stop harm to Indigenous people's health. Neither will it prevent the contribution of climate change to the health gap between Indigenous and other Australians. Increased reliance on adaptation rather than mitigation is likely to exacerbate this gap rather than close it.

HUMAN RIGHTS AND GLOBAL PATTERNS

Regardless of its intentions, a policy of reliance on adaptation as a major response to climate change is also likely to lead to greater cultural assimilation. The right to one's culture is considered important by many and is enshrined in Article 27 of the UN's Universal Declaration of Human Rights. Although clearly different from previous policies that were explicitly racist and aimed at obliterating Indigenous cultures, reliance on adaptation to

climate change may still impinge on the cultural rights of Indigenous Australians.

Globally, Indigenous Australians are among many disempowered minority groups with lower adaptive capacity than majority populations. Reliance on adaptation as a primary response to climate change will likely be especially detrimental to the health of these populations. Like Indigenous Australians, many of these groups will be concentrated on land that is only marginally productive and be less involved with the major economic drivers of their countries, leaving them particularly vulnerable to the vagaries of climate change. This will be especially true for groups with direct reliance on continued local ecological stability, including many native peoples.

The culturally homogenizing effects of excessive reliance on adaptation will not be confined to Australia. Many whose cultures tie them to the land for their food will find that climate change forces cultural adaptation. Many forms of adaptation, including specialized crops or new technology, may necessitate greater participation in the cash economy, which is itself likely to precipitate a cascade of other cultural changes. Without urgent mitigation, global climate change will become yet another driver of economic and cultural globalization.

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