


## Editorial

# Climate change and mental health: time for action and advocacy

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### Abstract

Climate change poses an existential threat to our planet and our health. We explore the intersections of climate change and mental health which has been under-recognised to date. Climate change can affect mental health directly through the effects of extreme weather events such as heat, drought and flooding, and indirectly through increasing rates of migration and inequality. Vulnerable individuals with neuropsychiatric disorders will be particularly at risk. Emerging evidence is also showing effects of air pollution on brain development. Mitigation efforts related to reducing carbon emissions will have both direct and indirect effects on mental health. A further consideration demonstrated by the COVID-19 pandemic is that the spread of infectious disease can have substantial effects on the mental health of the population. With climate change and biodiversity loss, pandemics could recur in the future with increasing frequency. It is now essential that mental health professionals be equipped as agents for climate action.

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Climate change is one of the greatest threats to human existence in the 21st century. If current climate action trajectories do not improve, children born now will experience more severe and frequent health threats than their predecessors (Watts *et al.* 2019). Food insecurity, increasing frequency of natural disasters, extreme weather events and spread of infectious diseases are predicted to be major future challenges to public health in the face of climate change. Health services already faced with growing demographic challenges will also encounter the additive effects of climate change on service demands (Watts *et al.* 2019). The existence of climate change is relatively undisputed, and the lack of progress to curtail its trajectory is concerning. In this editorial, we explore the possible effects of climate change on mental health.

### Extreme weather events

A growing number of studies are contributing towards an understanding of human influences on climate change and extreme weather events (Zhai *et al.* 2018). Berry *et al.* (2010) characterise these climate change-related weather events as acute, sub-acute and chronic. Examples of acute events include extreme weather events or natural disasters such as flooding, storms and hurricanes. Sub-acute events include drought and climate change-related epidemics. Chronic events include desertification, changes in ambient air temperature and rising sea levels. The effects of natural disasters on mental health include increases in a range of mental health problems. Flooding, an event we are likely to experience in

Ireland, comes with risks of chronic mental distress and Post Traumatic Stress Disorder (PTSD) (Jermacane *et al.* 2018; Munro *et al.* 2017; Reacher *et al.* 2004).

Severe storms also increase population-level mental health risks. After Hurricane Katrina, 16% of survivors sought treatment for mental health problems in the 8 months following the hurricane and this represented just one in three of the individuals whom reported significantly elevated psychological symptoms in that same period (Wang *et al.* 2007). Almost one in four Hurricane Katrina survivors who were undergoing mental health treatment prior to the hurricane reduced or discontinued their treatment because of the disruption they experienced (Wang *et al.* 2007).

### Effects of heat

Extreme heat and drought are known consequences of climate change (Dai, 2013; Di Lorenzo *et al.* 2010). Potential impacts may have already been seen in suicide rates in middle-aged males in rural areas of Australia that have experienced unprecedented periods of drought since the millennium (Hanigan *et al.* 2012). More broadly, extreme temperatures tend to have dose-response effects associated with a variety of population-level indicators of mental health including emergency presentations, mortality associated with neuropsychiatric disorders and mental health admissions (Page *et al.* 2007; Wang *et al.* 2014; Page *et al.* 2012). These effects are replicated across different social contexts and continents (Shiloh *et al.* 2005; Sung *et al.* 2011; Wang *et al.* 2018; Wang *et al.* 2014). There is limited understanding of the factors influencing why air temperatures are associated with increased mortality, admissions and emergency presentations of individuals living with severe mental illness. Comorbid physical illness, awareness of self-care, social isolation and inadequate housing are potential factors that could explain this relationship. There is a need for

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mental health professionals, particularly in heatwave prone countries to include this aspect of patient care in their risk assessments.

### Inequalities and migration

Climate change will disproportionately affect those experiencing disadvantage whom are likely to have higher pre-existing prevalence of mental disorder. The disproportionate effects of climate change will also occur on a variety of scales, both between and within countries. Climate change will mean fewer resources in already vulnerable areas experiencing biocapacity strain, such as the Sahel region of Africa, and this is likely to lead to further armed conflict. We may expect estimated population transfers of at least 200 million people from regions with high climate change susceptibility and low climate change adaptability, such as African and South Asian river deltas (Myers, 2005). These future climate change-related migrants will have high levels of vulnerability, facing many cultural, economic and linguistic barriers (Bhugra, 2004). In Ireland, asylum seekers have 5–6 fold higher risks of mental health disorders such as depression and PTSD, compared to the general population (McMahon *et al.* 2007; Toar *et al.* 2009). Migrant status and specifically cultural distance have also been associated with increased risks of psychotic disorders (Selten *et al.* 2020). Despite known health risks associated with migration, few countries in the developed world have developed migrant reception procedures and services that promote optimal health and well-being. This is an area of pressing need where mental health professionals need to advocate further.

### Natural and built environments

Unhealthy, air-polluted urban environments are increasingly being shown to have a negative impact on mental health (Braithwaite *et al.* 2019; Newbury *et al.* 2019). Potential mechanisms for this association such as effects of air pollution on brain inflammation and oxidative stress have been investigated in both human cohort studies and experimental animal models (Hajipour *et al.* 2020; Peters *et al.* 2019). Access to green spaces has been repeatedly associated with better mental and physical health and reduced all-cause mortality (Callaghan *et al.* 2021; Rojas-Rueda *et al.* 2019). Investments in creating safe and effective modes of active travel and mass transit and promoting increased physical exercise will help to reduce carbon emissions, particulate matter and toxin exposure and improve mental health. Active travel is an evidence-based health imperative and the medical community needs to be more effective in advancing it.

### Pandemics and biodiversity

In discussing the climate crisis, we must remember that we are facing a dual crisis in the environment. We are not just faced with the threat of a warming atmosphere but also that of biodiversity loss. As humans encroach further and further into remote places of the natural world, we face increasing risks of more spill-over events from more phylogenetically distant, and therefore more potentially virulent and transmissible micro-organisms (Johnson *et al.* 2020). Indeed climate change is suspected to play a role in increasing bat diversity in the Chinese province of Yunnan that has been associated with the emergence of both SARS COVID 1 and 2 (Beyer *et al.* 2021). We have recently experienced the mental health impacts of the COVID-19 pandemic (Moreno *et al.* 2020). These effects have been substantial and are likely to persist for many years to come. Preventing the next pandemic by increasing early warning

response systems through public health infrastructure investment is an urgent and absolute priority.

### Building capacity

Mental health and public health professionals are experienced in understanding science, communicating it effectively and enabling behaviour change. Therefore, they are uniquely valuable to the climate crisis. Our role should be twofold: Reducing the impact of our activities on the environment and providing trusted, hopeful leadership to prepare for the effects of climate change on the population's mental health. The carbon footprint of healthcare accounts for 4.4% of worldwide emissions. Ireland is a major emitter and there is much we must do to reduce the impact in our domestic health sector (Karliner *et al.* 2019). To prepare and strengthen the healthcare system to serve the population, the focus of care must shift from an individual, illness-based model to a whole community, health-based approach including prevention and fostering of social capital, community resilience and personal empowerment (Maughan *et al.* 2014). Our medical and psychiatric training and curricula must also be climate proofed (Maughan *et al.* 2014). COVID-19 has witnessed the world looking to healthcare professionals for leadership; our clinicians must be equipped to manage this effectively. Framing the climate crisis as a health crisis is both true and necessary, with the added benefit of increasing public engagement which is crucial in building momentum to avert catastrophic climate breakdown (Myers *et al.* 2012).

### Climate grief to climate action

Capturing the intersection of environmental change and mental health, Albrecht *et al.* (2007) described 'Solastalgia' (synonymous with eco-anxiety, ecological grief, climate grief and climate anxiety). This phenomenon is defined as personal distress associated with environmental change and destruction. Albrecht *et al.* (2007) first described this phenomenon in the drought-stricken Hunter Valley region in Australia. MacSuibhne (2009) argued that 'Solastalgia' is not yet a mental illness as it is not part of the diagnostic armamentarium of psychiatrists. Nevertheless, concepts such as climate grief have captured the public imagination through the activism of young people and, it is likely to be a term we will increasingly encounter. Climate anxiety in young people can be viewed as a response to an impending major crisis in which those most affected by threat have the least agency to enforce change. Beyond recognising the threat, health professionals should promote acceptance of the seriousness of climate change and endorse value-based actions to help everyone in society live more sustainable lives (Wu *et al.* 2020). The existence of organisations such as *Irish Doctors for the Environment* ([www.ide.ie](http://www.ide.ie)) and leadership from the World Health Organisation are hopeful signs that the medical profession is mobilising to address the climate crisis (WHO, 2017). There is little time to waste in promoting action. Every degree of warming counts.

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