

Climate change and mental health: How extreme heat can affect mental illnesses

May 29 2024, by Peter Crank

During heat waves, hospital admissions for mental health [spike](#). The past 10 years were the [hottest on record](#), and as we prepare for another scorcher of a summer, it's time to take steps to increase our preparedness for extreme heat.

The potential for heat stress, [heat exhaustion](#) and [heat stroke](#) are well known hazards of extreme heat. Yet, physical health is not the only factor to consider under extreme heat; mental health can also suffer. Many people can relate to the [sleepless nights during hot summer months](#), as well as anecdotal experiences of irritation and aggression when thermally uncomfortable.

But for those living with mental illnesses, the hazard of extreme heat is more dire than temperamental responses to day-to-day disruptions. From [my research](#) in Phoenix, Ariz. and the [work of others](#) during the 2021 heat dome in British Columbia, we know that the heat is exacerbating existing mental illnesses, increasing likelihoods of hospitalization and even death under warmer conditions for people with [schizophrenia](#).

The interactions between environment and health are increasingly identified by researchers as public health concerns as air and [water quality](#) issues, as well as [death tolls from heat](#), make headlines. Research has shown that lower socioeconomic groups, [racialized people](#) and [the unhoused](#), are at greater risk of exposure to hotter conditions, while [older adults](#) are more vulnerable to hotter conditions.

Heat and mental illness

The relationship between mental illness and temperature has only recently been quantified as medical records and understanding of mental illnesses have improved. My work as an urban climatologist focuses on the impact of urbanization and heat on human health. I explore the variety of unexpected impacts of heat on people. Specifically, I've studied the population diagnosed with schizophrenia.

[Schizophrenia](#) is a mental illness that disrupts transmission of information to the brain. The part of the brain most impacted also houses our [thermoregulatory functions](#). It's the part that tells us we're too hot and to start sweating or we're too cold and should shiver to stay warm.

So those with schizophrenia aren't able to respond to extreme heat the way the general population does; their bodies aren't telling them to take precautions. Further, the medications used to address schizophrenia also raise [core body temperature](#). This means that when taking the medication, people with schizophrenia are closer to the thresholds for [heat stress](#) and stroke than the general population.

In studying hospitalizations for schizophrenia in Phoenix (where summertime overnight low temperatures are, on average, at 30°C) between 2006 and 2014, I found that minimum air temperature (the overnight low temperature) has a significant relationship to the number of hospitalizations for schizophrenia on that day and the following day. Around 3% of all schizophrenia hospitalizations during that time period can be attributed to the overnight low temperature.

The risk is highest in both extremely cold (lower than 3°C) and extremely hot conditions (higher than 30°C). These hospitalizations cost the Phoenix health-care system over US\$2 million (in 2024 USD).

Certainly, Canadians see much colder conditions than 3°C at night but rarely experience overnight lows above 30°C; however, the [2021 heat dome](#) resulted in over [600 deaths in B.C.](#) and researchers found that [schizophrenia was the chronic condition most associated with risk of death during the extreme heat.](#)

Extreme heat can have devastating impacts on those living with mental illness, our health-care system and our communities.

Schizophrenia is not the most common mental illness in Canada. However, it can serve as an example of how environmental issues can affect mental illness. [One in every five Canadians experiences a mental illness each year.](#) More than 250,000 Canadian youth experience major depression and systemic inequities exacerbated by disparities in treatment and care for those experiencing mental illness.

While there are many different factors potentially contributing to mental illness, heat plays a pervasive role in a wide range of [mental health issues](#). Taking what steps we can to reduce this burden on those living with [mental illnesses](#) may also have knock-on benefits to the rest of society, such as reduced use of hospital emergency departments during [heat waves](#).

Coping with climate change

So if climate change is continuing to bring hotter summers, what can be done to prevent these hospitalizations and deaths? There are measures that have broader benefits in addition to improving mental illness outcomes during [extreme heat](#).

A common first step is ensuring access for all Canadians to air conditioning. [Statistics Canada highlighted the importance of air conditioning for vulnerable populations.](#) Warming conditions mean parts

of Canada that didn't need air conditioning 30 years ago can now become [oppressively hot inside buildings without proper cooling](#).

Yet, air conditioning is [dependent on the electrical grid](#) and continues to produce waste heat and greenhouse gas emissions. There is a better way: designing our cities to be greener. There are a lot of previously known benefits to greening cities; reducing the [urban heat island](#), improving air quality and in some cases [increasing property values](#) (both positive and negative outcomes).

However, there are some mental health benefits too. I contributed to a [review of urban greenery mitigation science](#) and highlighted the mental health benefits, including reduced depression, irritation and aggression.

Urban green space has been shown to improve [mood, self-esteem](#) and even [speed up recovery from illness](#). So as the temperature spikes and you switch on the [air conditioning](#) and reach for the cold drinks, remember there are impacts to us all beyond just physical health, and pause to note how the heat is influencing your mood.

Extreme heat will continue to impact Canada (and increasingly so as the climate changes). However, the negative impacts on the most vulnerable, including those living with mental illness can, in part, be reduced by taking steps to ensure our cities are benefiting us all.

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