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## The Impact of Climate Change on Mental Health: A Systematic Review

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### Abstract

One of the biggest issues of our day is climate change. The entire scientific community is concerned about the effects of climate change on fragile societies and exposed biological beings. Human illnesses can be caused directly or indirectly by a variety of natural disasters, including heat waves, floods, hurricanes, droughts, fires, forest loss, glaciers, river disappearance, and deserts. Psychiatric research on mental illnesses associated with climate change is conspicuously lacking, nevertheless.

**Keywords:** climate change, mental health, resilience, migration, vulnerability, climatic and economic turmoil, extreme events.

### Introduction

Scientists have been attempting to comprehend how environmental elements contribute to climate change since the 1970s. Floods, droughts, and other natural disasters are clear regional effects of our changing climate. Global warming is the result of human activity changing the composition of the atmosphere, creating a greenhouse effect. These activities produce a flux of complex variance with setbacks related also to mental health (Cianconi, et al.2015).

Human health is seriously threatened by climate change. All facets of human and natural systems, including social and economic circumstances and the operation of health systems, are impacted, in addition to the physical environment. As a result, it is a threat multiplier that threatens to undo decades of advancements in health. As climatic conditions change, more frequent and intensifying weather and climate events are observed, including storms, extreme heat, floods, droughts and wildfires. Both directly and indirectly, these weather and climatic risks raise the risk of noncommunicable diseases, infectious disease onset and transmission, fatalities, and medical emergencies. According to WHO data, 600 million people have foodborne infections each year, and 30% of foodborne deaths occur in children under the age of five. Additionally, 2 billion people lack access to safe drinking water. Risks of foodborne and waterborne illnesses are increased by climate stresses. 770 million people became hungry in 2020, mostly in Asia and Africa. Food and nutrition problems are made worse by climate change, which has an impact on food diversity, quality, and availability.

Climate change is the term used to describe comparatively steady changes in a region's temperature and precipitation patterns over time. Such a climate change has been described as a critical global challenge (Pandve,2008) especially due to the fact that human activities have been contributory to changes in global climate. It has been observed that over least few decades the average global temperature has risen by 0.5°C due to anthropogenic emissions, (Trenberth,2001) and projections for 2100 AD suggest that average global temperatures will rise by 2.4–5.8°C (McMichael, Woodruff and Hales,2006). Such a slow rise in temperature is probably linked to ice cap melting, coastal areas sinking, unfavourable precipitation, and droughts and floods in various places. (Solomon, et.al,2007). Such change in climate on a global scale is likely to affect the

mankind in many different ways. The effect of global climate change is likely to be more severe in developing countries (Mendelsohn, Dinar, Williams, 2006).

**Methods:** Literature available on Three databases (PsycINFO, PubMed and SCOPUS) were reviewed. An integrative review of the literature was performed using parameters outlined by Russell (2005) parameters were used to summarize and synthesize current literature on the multitude of effects on climate change and mental health. We searched for correlations between traditional mental illnesses like anxiety, schizophrenia, mood disorders, sadness, suicide, aggressive conduct, and dejection over the loss of the typical landscape and climate change and extreme weather phenomena.

**Results:** A significant portion of the population is impacted by climate change, which also poses various dangers to public health in different geographic locations. The intricacy and originality of this problem may be the cause of the paucity of literature. The effects of climate change have a wide range of phenomenologies; some mental illnesses are more unique to abnormal climate conditions, while others are more widespread. Furthermore, a lack of access to resources, information, and protection, as well as direct exposure and increased vulnerability due to their geographic circumstances, are all consequences of climate change for various population groups. Perhaps it's also important to note that several articles used freshly developed terminology like ecoanxiety, ecoguilt, ecopsychology, ecological grieving, solastalgia, and biospheric worry to characterise the relationship between climate events and mental problems.

**Conclusions:** Climate change can have short-term or long-term, direct or indirect effects. Acute experiences can cause well-known psychopathological patterns by acting through mechanisms akin to those of traumatic stress. Furthermore, exposure to severe or protracted weather-related events can have delayed effects, including diseases like posttraumatic stress disorder, or even be passed on to subsequent generations.

**Climate change is a growing global crisis.** It is already enormous, and it will only get bigger if nothing is done. Hurricanes, floods, and wildfires are examples of acute risks; ecosystem changes, food and water insecurity, and the loss of place and culture are examples of slower-onset threats. Among the many hazards to the global environment is 'Climate change'. Water and food instability, air pollution, and contamination of land, rivers, and oceans are all consequences of unsustainable human activities like deforestation, ecosystem degradation, biodiversity loss, and economies that depend on fossil fuels. All of these are contributing to the worsening of the climate crisis and having quantifiable negative effects on human health, mental health, and well-being. The World Health Organization (WHO) conceptualizes *mental health* as a "state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community". Keyes (2014) identifies three components of mental health: *emotional well-being, psychological well-being and social well-being*.

- Emotional well-being includes happiness, interest in life, and satisfaction;
- Psychological well-being includes liking most parts of one's own personality, being good at managing the responsibilities of daily life, having good relationships with others, and being satisfied with one's own life;
- Social well-being refers to positive functioning and involves having something to contribute to society (social contribution), feeling part of a community (social integration), believing that society is becoming a better place for all people (social actualization), and that the way society works makes sense to them (social coherence).

The effects of climate change on physical health are widespread: floods spread waterborne diseases, wildfire air pollution causes respiratory and cardiovascular ailments, and severe temperatures cause heat stroke and mortality. However, there is growing evidence that climate change might also have an impact on our mental health, which will further strain the already troubled behavioural health care industry. Here are several acute and long-term effects of climate change on mental health. Post-traumatic stress disorder (PTSD), substance misuse, anxiety, and depression are examples of acute consequences that tend to worsen following a disaster. The risk of psychological trauma and shock from injury and damage to or loss of homes, land and other property is significant in the aftermath of disasters (Neria and Schultz, 2012). While acute effects from shock and trauma may fade away if and when life returns to more normal conditions, and when security is re-established, PTSD may manifest as a chronic disorder. Other chronic impacts reported include higher rates of aggression, violence and a persisting sense of loss of, for example, personally important places (EASAC report, 2020). Additional effects discussed in the research include increased psychosis, suicidal thoughts and actions, survivor guilt, climatic and ecological distress and bereavement, and suicide. Suicide is more likely to occur among people who have experienced major tragedies. Individuals who already have mental health issues can be disproportionately impacted (Cunsolo and Ellis, 2018).

**MATERIALS AND METHODS-** An integrative review of the literature was performed using parameters outlined by Russell (2005) with the purpose of summarizing and synthesizing current literature on the multitude of effects on climate change and mental health. We identified the following research question: how might mental health be impacted by climate change and what are the mechanisms by which this happens? Using phrases associated with climate change, including "global warming," "natural disaster," and "climate," as well as terms pertaining to possible effects on mental health, like "depression," "PTSD," "suicide," and "violence," a search technique was used. Three databases (PsycINFO, PubMed and SCOPUS) were searched. In order to be deemed eligible, studies needed to present primary data, be published in English in peer-reviewed journals, have a high impact factor or be well-cited. Although we restricted our search to works published during the previous five years, we did include earlier works if they were extremely pertinent and properly referenced. Studies with low impact factors or those that were not frequently mentioned were disqualified.

**RESULTS-** The emerging literature in this area deals with different climate change-related mental health outcomes derived directly from impacts of extreme events such as drought, wildfires, floods, and storms and more indirectly related to rising temperatures and sea levels, for example causing forced migration (Clayton, et al., 2017). Although there are certain difficulties in precisely attributing mental health results to climate change, the field of study has come to the conclusion that the likelihood of consequences is growing. (Hayes et al., 2018).

A vast body of works on mental health and climate change is now emerging (Bourque and Willox, 2014). Impacts on mental health can occur after or even before an extreme event (Berry, Bowen, Kjellstrom, 2010). The effects of climate change on mental health can range from mild signs of stress and distress to severe conditions like melancholy, anxiety, and suicidal thoughts, as well as sleep difficulties and anxiety. Other repercussions could be how people and communities deal with climate change and its effects in their daily lives, perspectives, and experiences, as well as how they comprehend and react to it (WHO, 2013). The slow, more gradual impact by climate change on human and ecological systems may negatively impact the health and wellbeing by increasing the stress on people and communities. The increase in awareness and knowledge about the serious consequences of climate change may have a vicarious and/or existential impact. To worry about what irrevocable impacts of climate change mean for oneself, children and future generations may add

significant additional stress. The risks that human mental health and wellbeing are negatively affected are expected to increase, and even more in the future with more apparent climate change consequences. Some natural disasters are possibly going to be more frequent because of climate change. Notoriously, reactions to extreme events that involve life disruption, such as loss of life, resources, social support and social networks, or extensive relocation, are posttraumatic stress disorder (PTSD), depression, and general anxiety, increased substance use or misuse, and suicidal thoughts. Research has shown that peritraumatic experience is highly related to acute stress during and immediately after a disaster, which is expected to lead to the onset of PTSD (Gruebner, et al.,2017). Later on, other consequences come out for survivors, such as reduced daily life activities and the loss of their “sense of place”. These conditions could have an impact and exacerbate mental health risks. News regarding climate change makes people uncertain and stressed, even depressed and with a sense of powerlessness. The concrete impact of those changes in life brings different types of psychopathological reaction to these events. Briefly, acute impacts refer to all the extreme events (e.g. floods, hurricanes, wildfires, etc.) that immediately expose undefended and helpless people to mental injuries. Subacute impacts involve intense emotions experienced by people who indirectly witness the effects of climate change, anxiety related to uncertainty about surviving of humans and other species and, finally, sense of being blocked, disorientation, and passivity. Long-term outcomes come in the form of large-scale social and community effects outbreaking into forms of violence, struggle over limited resources, displacement and forced migration (Hsiang, Burke and Miguel,2013), post-disaster adjustment, and chronic environmental stress (Acharibasam and Anuga,2018).

Here are a few recent researches findings examining the effects of climate change on mental health:

- **Gender-based violence:** Researchers at the University of Cambridge examined 41 papers in 2022 that looked at a variety of extreme weather occurrences, including heat waves, wildfires, droughts, floods, and storms. They discovered that extreme weather and climatic events seem to make gender-based violence worse. Stress, enabling conditions, social instability, and economic shock are all contributing factors.
- **Posttraumatic stress disorder (PTSD):** According to a 2021 study from the University of California–San Diego, survivors of the 2018 Camp Fire, one of the deadliest and most destructive wildfires in California history, had PTSD rates comparable to those of military veterans and were more likely to have anxiety and sadness. The incidence of depression and PTSD among storm and flood survivors are comparable.
- **Suicide:** Suicide rates rise as a result of droughts' economic effects, especially for farmers. Furthermore, by 2050, up to 40,000 more suicides could occur in the US and Mexico due to rising temperatures, according to a 2018 study published in the journal Nature.
- **Aggression:** Aggressive behaviours increase with temperature. According to a 2021 study in the Journal of Public Economics, days with temperatures exceeding 85°F saw a 5.7% increase in violent crime in Los Angeles when compared to days with lower temperatures.
- **Anxiety:** An overwhelming sensation of despair, grief, and dread in the face of a warming globe or anxiety and worry about climate change and its impacts is known as climate anxiety, and it affects even Americans who have not been personally impacted by a climatic calamity. According to a 2020 American Psychological Association survey, 56% of American adults believe that climate change is the most significant issue confronting the globe today. In their daily lives, nearly half of young adults (18–34 years old) reported feeling stressed about climate change.

The aforementioned studies show that there are several acute and long-term effects of climate change on mental health. Post-traumatic stress disorder (PTSD), substance misuse, anxiety, and depression are examples of acute consequences that tend to worsen following a disaster. In the aftermath of disasters, there is a considerable risk of psychological trauma and shock due to injuries and the loss or damage of homes, land, and other things. PTSD may appear as a chronic disorder, but the immediate symptoms of shock and trauma may subside if and when life returns to more normal circumstances and security is restored. Higher rates of hostility, violence, and a lingering sense of loss of, say, personally significant locations are other chronic effects that have been documented. Additional effects discussed in the research include increased psychosis, suicidal thoughts and actions, survivor guilt, climatic and ecological distress and bereavement, and suicide. Suicide is more likely to occur among people who have experienced major tragedies. Individuals who already have mental health issues can be disproportionately impacted.

**CONCLUSIONS-** Climate change will create new health risks and enhance existing public health concerns worldwide, disproportionately affecting those already marginalised. Impacts on mental health must receive more consideration in research, practice, and policy. People's and communities' health is being impacted by climate change more and more, which puts the foundation of health systems under threat. The most crucial adaptation tools are robust, well-functioning public health systems, with sufficient funding for mental health services guaranteeing access to care for individuals in need. After heat waves and other extreme weather events, it is crucial to conduct surveys in order to gather new information and improve preparedness. To lower the risks to mental health associated with climate change and to safeguard already vulnerable groups, vulnerability assessments that identify populations at risk and response strategies to address climate change risks are required at all levels. The creation of mental health initiatives for improved psychological and social resilience should be part of this.

Education, information, and monitoring of changing and emerging national to local health risks are important diagnostic and preventive tools. Staff in the health industry, including routine medical care providers and first responders following severe incidents, need to be educated. Decision-makers, local government representatives, risk groups, and the general public should all be the target of information regarding the effects of climate change on mental health.

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