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Ministry of Health and Family Welfare
Government of India

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Amrit Mahotsav

Climate Change and Mental Health

Training Manual for **Vulnerable groups**

National Programme on Climate Change and Human Health

MINISTRY OF HEALTH AND FAMILY WELFARE



National Programme
on Climate Change
and Human Health

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Understanding Climate Change

Climate change is a global public health emergency. The World Health Organization (WHO) described it as "the greatest challenge of the 21st century, threatening all aspects of the society in which we live". The United Nations Framework Convention on Climate Change (UNFCCC), Article 1, defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." The UNFCCC thus distinguishes between climate change attributable to human activities altering the atmospheric composition and climate variability attributable to natural causes.

Vulnerability is determined by sensitivity to climate change-related health hazards, exposure to risks, and ability to adjust to or cope with climatic variability and change. Older adults, migrant groups, women, pregnant women, homeless people and persons with pre-existing mental illness are all vulnerable groups. The impact of adverse events due to climate change is higher on vulnerable sections of society. Mental health effects from climate change range from minor stress and suffering to clinical illnesses, including anxiety, depression, post-traumatic stress, and suicidality. Climate change also increases the risk for sleep disorders like insufficient sleep syndrome, poor sleep quality, insomnia, obstructive sleep apnea, and nightmares. Climate change is a destabilizing influence that exacerbates pre-existing socially determined vulnerabilities, increasing the risk of mental illness and sleep disorders in particular groups. The same groups frequently lack the resources or capacity to cope with climate change's consequences.

CHAPTER 1: WOMEN

Introduction:

Women differ not just in their physical traits but also in their psychological temperament. There are differences in the structure of women's brains and how they absorb information and react to events and stimuli. Women have different ways of expressing their feelings and responding towards stress or certain circumstances. As a result, the distinctions between men and women are based on physiological and psychological characteristics.

Men and women have diverse roles, duties, decision-making abilities, access to land and natural resources, opportunities, and requirements, all of which are held by both sexes. Women worldwide have less access to resources like land, loans, agricultural inputs, decision-making mechanisms, technology, training, and extension services, making them more vulnerable to climate change induced events than men.

Why are women more vulnerable?

Women are particularly vulnerable to climate change and its associated outcomes due to various social, economic, and cultural issues. Particularly, Indian women rely heavily on local natural resources for survival, specifically in rural regions, including household water supply, cooking, and overall energy management of the family. They are primarily in charge of the more time-consuming and labour-intensive jobs done by hand or with rudimentary instruments.



Most women cannot obtain information on floods, earthquakes, cyclones, and tsunamis, among other natural disasters. Women are less likely to leave their houses during catastrophes because they lack coping abilities such as swimming, climbing trees, etc. Women are excluded from catastrophe decision-making since life-saving skills are primarily taught to men. This effect is most pronounced in nations where women's social, economic, and political positions are extremely low.

How climate change affects women's mental health and sleep?

- India is a culturally and geographically diverse country. Here, women are found to be at more risk and bear a bigger burden as a result of climate change. As per the intersectionality theory, pregnant women, young children, and the elderly have a greater relative risk of health inequities. Climate change is associated with prenatal maternal stress and various pregnancy outcomes for pregnant women and their children. A mother's stress throughout her pregnancy is referred to as Prenatal Maternal Stress (PNMS). Prenatal stress can be chronic, resulting from continuing events in a woman's life, or acute, resulting from unexpected changes in her daily routine or environment.



Multiple environmental factors act on the mother before, during, and after pregnancy. Also, breastfeeding can influence the child's development in ways that may favour survival in the short term but may compromise health in the long run, according to the developmental origins of the health and disease (DOHaD) approach. Several studies demonstrate that pre-conception stress or pregnant mothers' depression or unpleasant life experiences in human pregnancy are linked to various unfavourable pregnancy outcomes and developmental trajectories for the infant. Women are disproportionately affected by cyclones and windstorms, both directly and indirectly. After disasters, women, young individuals, and persons with poor socio-economic status are at a higher risk of anxiety and mood problems.

Environmental temperature has a significant impact on human sleep. Increase in minimum temperature beyond:

- ❖ 10°C has been found to reduce the duration of sleep at the individual level
- ❖ 15°C increases chances for early awakening
- ❖ 25°C leads to delayed sleep onset

These effects lead to insufficient sleep and have been more pronounced in women (Minor et al., 2020).

Effects of PNMS on maternal and child health:

1. Prenatal Maternal Stress and Non-Communicable Diseases- Studies suggest that stressing pregnant women is associated with negative pregnancy outcomes and adverse developmental trajectories for new-born like anxiety, conduct disorder, Attention Deficit Hyperactivity Disorder, and impaired adaptive immunity.
2. PNMS and generational effects- Stress caused by climate change can be passed on to succeeding generations.

3. PNMS and stressor accumulation (allostatic load) - Individuals subjected to stressors that build up to an individual's total stress load are referred to as allostatic load. When this becomes too much, it might have a negative impact on one's health. Accumulated stresses can cause an increased allostatic load due to climate change.

Effect of climate change on maternal and child health with regard to sleep:

Increased nighttime skyglow (defined as the ability to see only one-third to one-fourth of stars compared to what can be seen from an unpolluted natural nighttime sky) has been found to hamper foetal growth (Argys et al., 2021). This increases the chances of:

- ❖ Lower birth weight
- ❖ Shorter gestational length
- ❖ Preterm birth

This effect is considered to be mediated by a disrupted circadian cycle and insufficient sleep (Argys et al., 2021).

- Climate change and menstrual mental health: Long-term climate changes result in rising temperatures, leading to greater stress levels. This is never a good sign because stress directly affects the delicate balance of hormones in the body leading to irregular menstrual cycles.

Climate change is having an increasingly negative impact on mental health. **Eco-anxiety** is an emerging phenomenon in which a person experiences worry, grief, helplessness, and fear of the future due to rising temperatures, extreme weather events, and other repercussions of climate change. Women can experience mood problems after being victims of disasters. They are more likely than men to develop post-traumatic stress disorder (PTSD), which may be linked to increased domestic violence following catastrophic weather occurrences. Aside from PTSD, women are more likely to have despair and mental discomfort. When it comes to rising temperatures, the detrimental impacts of temperatures above 30°C on the likelihood of mental health problems are greatest in women. While women do not develop different types of disorders from men, their vulnerabilities socially put them at a higher risk, thus increasing their susceptibility to climate change-related illnesses.



Intervention and preventive measures:

Climate change is a worldwide issue that emerges in several ways, necessitating solutions from various organizations at various levels.

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- Establish workshops for stakeholders to network and coordinate action around engaging women in climate change mitigation and adaptation processes, create a fund, and execute national gender-sensitive and gender-responsive climate change group action plans.
- Men and women should have equal access to, control over, and distribute benefits.
- Analyse and understand men's and women's vulnerability, resilience, and autonomy levels when presented with various dangers.
 - Increasing participation of women in pre and post disaster management.
- Use local expertise to help with social and economic development.
- Take proactive measures to mitigate the effects of natural disasters by implementing disaster risk reduction initiatives.
- Women's mental health access in nearby hospitals where they can seek care in the aftermath of a disaster

- To share the emergency plan among women centered in microhabitats and primary caregivers for their children.

Private

- Collaborations with Non-Governmental Organizations (NGOs) to fund programming that involves local women and promotes sustainability.
- Encourage or initiate programmes that strengthen women's ability to combat the consequences of climate change.
- Invest in programmes that help mitigate climate change and develop socially and environmentally conscious value chains while providing jobs for women and men in local economies.

What can you do?

- Maintaining strong communities
- Have an emergency plan
- Create an emergency kit
- Learn new skills to build personal resilience
- Stay physically active
- Maintaining positive relationships with family and friends
- Seek help from a mental health professional or sleep specialist if you or your loved one requires help

CHAPTER 2: ELDERLY POPULATIONS

Introduction:

Climate change has been linked to negative physical and mental health consequences, with the elderly being excessively affected. Extreme weather phenomena such as heat waves, cold waves, and natural calamities have direct consequences. Ecosystem impacts, environmental effects, and socio-economic consequences contribute to indirect effects (food and economic insecurity, relocation, and community disruption). These direct and indirect effects increase morbidity and mortality from cardiovascular diseases, other non-communicable diseases, infectious and water-borne diseases, malnutrition, and, most importantly, the mental health of the aged.



Why elderly are more vulnerable?

Two-thirds of adults aged 60 and above reside in low and middle-income nations, which are more vulnerable to disasters. While climate change affects everyone, a growing body of evidence shows that the elderly are particularly vulnerable. They are in greater danger because of their heightened vulnerability to illness, limited mobility, and the effects of stress on food and water supplies. Social and economic factors, as well as a combination of chronic health

problems, social isolation, and limited access to services, can increase vulnerability, which is often concentrated among the elder, reducing their ability to cope with climate-related stresses and making them feel more anxious. Minor problems might swiftly escalate into severe problems beyond an older adult's ability to handle them. At the same time, each older person has a unique set of capabilities for dealing with the effects of climate change. Many elderly people, especially in times of crisis, play a vital role in their families and communities.

The elderly population also suffers age-related neuronal loss and other comorbidities. These conditions disrupt their circadian rhythm, reduce neuronal stimulation and lower their immunity, making them vulnerable to sleep disorders like insomnia, circadian rhythm sleep disorders, parasomnia, and obstructive sleep apnoea.



How Climate change affects elders' mental health?

Extreme Heat:

As a result of climate change, heat waves will become even more often, along with year-round increased temperatures. Elderly people with congestive heart failure, diabetes, or other chronic health issues, increase their sensitivity to heat, which can increase the risk of illness and fatality. Extreme heat has an impact not only on the body but also on the mind. In persons with mental illness, these effects are exacerbated due to various reasons like increased irritability and behavioural disturbances due to excessive heat and medications interfering with normal

physiological homeostasis. Elderly people living alone, with chronic medical problems, and are on certain medications, become especially susceptible to hot weather and need special care.

Extreme Events:

Climate change affects the intensity and frequency of extreme weather events, such as heatwaves, droughts, landslides, heavy rain, flooding etc. An extreme incident may require relocation or evacuation of older people, putting them at a higher risk of both physical and mental health consequences. Loneliness can also occur due to losing family members and community links. After a tragedy, coping with day-to-day living may be challenging, and the psychological impact on older individuals might be larger than on other groups. Compared to young individuals, older persons were more likely to develop PTSD symptoms after exposure to natural catastrophes (Parker et al. (2015). Similarly, older persons are more likely to develop adjustment disorders after exposure to disaster.

Environmental temperature:

Environmental temperature has a significant impact on human sleep. Increase in minimum temperature beyond:

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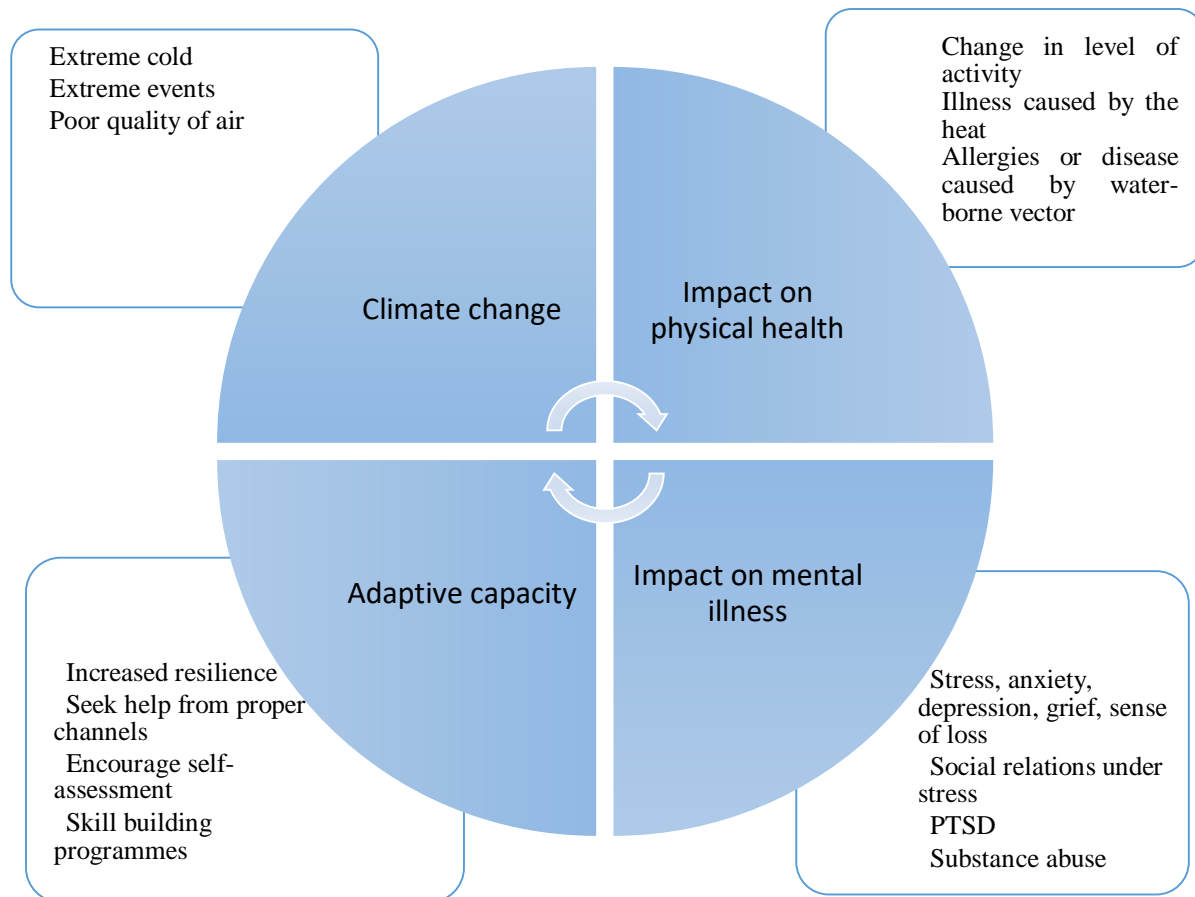
These effects lead to insufficient sleep and have been more pronounced in elderly (Minor et al., 2020).

The average monthly increase in nighttime temperature increases the number of nights with insufficient sleep with more pronounced effects during summer and in the elderly (Obradovich et al., 2017).

Poor air quality:

- ❖ Air pollution can also increase the risk of heart attack, asthma, and other respiratory-related diseases in older adults. Recently, many studies have shown a direct and indirect relationship between poor air quality and mental health. Smog is formed by pollution from industry and transportation, as well as pollution from burning coal in the winter, which puts a strain on both physical and mental health. People become melancholic and dispirited due to insufficient sunshine and pollution, which exacerbates depression and increases the suicide rate. Secondly, air pollution impacts inhabitants' physical health, which can lead to mental health issues.
- ❖ Furthermore, when air pollution causes physical health problems, patients cannot engage in the same daily activities as healthy people, resulting in psychological stress.

Air pollution is associated with depressive symptoms, mood disorders, and psychiatric emergencies (Bullinger 1989, Jacobs et al. 1984, Rotton and Frey 1984). Exposure to particulate matter and NO₂ increases the risk of poor sleep quality and obstructive sleep apnoea across ages (Cao et al., 2021).



Intervention and preventive measures:

1. Keep a list of medications
2. Connect to required resources and services
3. If available, keep them with loved ones
4. Link with access to healthcare
5. Listen to their experiences and leadership roles are taken in emergencies
6. Consider older people's knowledge and experience in developing coping strategies following a disaster
7. Create neighbourhood communities for the elderly
8. Talk to the medical facility provider about an emergency backup plan
9. Increase resilience
10. Train them to seek help from the proper channel

11. Encourage for self-assessment
12. Skill-building programmes
13. Institutional care for the elderly needs to be set up as they have appropriate facilities to prevent them from extreme heat or air pollution
14. Food relief distribution programmes must make food products accessible to the elderly and other vulnerable families while also ensuring that they meet their dietary requirements
15. Invest in healthcare systems and basic public health measures, such as clean water and sanitation, to make them climate-resilient and responsive to older people, particularly in areas where chronic and non-communicable diseases, infectious diseases, and psychological conditions can be exacerbated by climate change.

CHAPTER 3: HOMELESS PEOPLE

Introduction

Persons who sleep in shelters are included in the definition of homelessness. In the health sector, the term 'absolute homelessness' is used, which covers individuals who sleep outdoors or in other areas not designed for human habitation. Climate change affects mental health as a social determinant. There has been a significant impact on refugees and ethnic minorities among migrants and the homeless, and vulnerable people due to climate change induced vagaries.



Why are they vulnerable?

Although the processes through which climate change affects homeless individuals are being better understood, there are still significant knowledge gaps. The role of shelter is one such gap. Individuals without protection or who live in temporary and inadequate housing face significant physical and mental health consequences due to climate change. They are at high risk due to greater exposure and poorer protection from the elements of disaster and climate change. Chronic illness severity is typically higher in homeless persons than in the general population due to extreme poverty, delays in seeking care, non-adherence to therapy, drug abuse, cognitive impairment, and other factors.

Effects on Homeless people's mental health

Depression and schizophrenia are significantly more frequent in the homeless population than in the general population. Substance addiction is also quite common among the homeless; problems with alcohol are six to seven times more common than in the general population.

The rate of smoking among the homeless is two to three times that of the general population. (Connor et al., 2002)

Low socio-economic position and poor living conditions are established risk factors for heat stress. Heatwaves or cold temperatures have been reported to kill homeless people. Cardiovascular illness, lung disease, senior age, living alone, being socially isolated, not utilizing air conditioning, drinking, taking tranquilizers, and cognitive impairment are all risk factors for mortality during heat waves. Drownings, infectious disease outbreaks, and a rise in anxiety and sadness are all health consequences of floods and storms. Floods and storms, like other natural catastrophes, have a disproportionately negative impact on the most disadvantaged people. Increased rains, floods, and cyclones will disproportionately affect the homeless, who do not have the resources to be able to get themselves out of flood zones and are more prone to suffer from Post-Traumatic Stress Disorder and other mental disorders.

Effect of migration on sleep:

Migration, in response to natural calamities, compels people to move to new and strange places that are usually not familiar. People are compelled to stay in crowded shelters and share the place with strangers. These issues are known to affect sleep adversely. Further, these effects are known to reduce the total duration of sleep (DeSantis et al., 2013).

Intervention/Preventive Measure

1. Provide outreach initiatives to homeless people to build connections
2. Provide homeless people with prior information about shelters
3. Ensure that the shelter is accessible (e.g., shuttle buses in emergencies)
4. Investigate public views of heat-related health risks
5. To guarantee that local homeless people have access to appropriate aid and community entities should be educated about them
6. In catastrophe literature, establish explicit definitions of "sheltering" and "housing" that are consistent.

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1. Shelter accessibility: A list of shelters meant for homeless persons, their locations, and contact/nodal persons running the shelter homes should be available to all in the public domain, with real-time updates on any changes.
2. Design of the shelters: Shelters should not be crowded, should be located in a peaceful and green area, and should be ventilated. Adequate measures should be taken to ensure the safety of migrants. These factors have been found to improve sleep.
3. Designated, identified, and dedicated grievance redressal system to address the problems of homeless people and its details should be known to all.
4. Make homeless people a part of catastrophe preparedness.
5. Increasing the number of cooling and warming centres.

CHAPTER 4: PRE-EXISTING MENTAL ILLNESS AND SLEEP DISORDERS

Introduction

The impact of adverse events due to climate change is higher on vulnerable sections of society. One such section includes people with existing mental illnesses, among others. Although research on the direct impact of various climate determinants- air, water, land quality, and unpredictable weather events on mental health is ongoing, it is crucial to look at the impacts on an already vulnerable population. Globally, around one in ten people have a mental illness. Nearly twenty crore people in India require mental health interventions. This means India alone accounts for 14% of the population, is vulnerable to climate change.



Extreme weather events and rising ambient temperatures, the two most studied climate change parameters, are the two key determinants of the well-being of people with existing mental illnesses.

Why are they vulnerable?

Disruption of mental health services due to adverse climate events leads to a lack of adequate professional support and prescription for the already diagnosed population, leading to worsening symptoms. It has been noted in a study that people already suffering from Obsessive Compulsive Disorder (OCD) tend to experience obsessions and compulsions directly aligned with climate change. Adverse climate events and changing economies make it more difficult to access sources of livelihood and ensure food safety. According to a study, people with mental illness were three times more likely than those without mental illness to die due to the heatwave.

Effects on their mental health:

The impact is even more problematic for those suffering from depression, anxiety, PTSD, and cognitive decline following a traumatic event, as there is an increased likelihood of worsening the symptoms due to the event itself. The elderly-mentally ill, have the disadvantage of poor mobility, worsening their accessibility to already reduced services. Patients with mental illness showed an overall increase in the risk of death per 1°C increase in temperature. The higher temperature has also been linked to increased suicide and aggression rates. Younger patients and those with a primary diagnosis of substance misuse have significant mortality risks. With the outdoors becoming less habitable, there is a risk of increased time spent indoors and lesser physical activity, which can be harmful, especially for children and adolescents with existing mental and neurodevelopmental disorders.

Intervention/ Preventive measures

1. Make primary mental health prevention a priority throughout human life-cycle
2. Improve mental health systems and the connections between healthcare providers and local communities
3. Increase access to high-quality care for all people
4. Adequate social support
5. Act within local services to reduce carbon emissions and improve mental healthcare
6. Cognitive, emotional, and behavioural coping mechanisms should be available
7. Sensitization of disaster management teams and government agencies periodically on the inclusion of persons with mental illness/ developmental disorder under the PWD category under the RPWD act 2016
8. Making psychotropic medication available and accessible to persons with mental illness during the crisis
9. Publicizing more about various government initiatives related to telephonic/video-based psychosocial support systems
10. Often homeless mentally ill have no identity and address proof to access many benefits. There should be a mechanism to address this
11. Re-orientation training programmes on dealing with disaster events with a special focus on pre-disaster preparation to anticipate the damage would help reduce their mental stress and strengthen resilience

COUNSELLOR



CHAPTER-5: MIGRANTS

Introduction

The International Organization for Migration defines environmental migration as "persons or groups of persons, whose life or living conditions are forced to leave their habitual residence primarily because of sudden or progressive changes in the environment, leave or decide to leave, temporarily or permanently, and who move within or outside their country".



Temperature rises have been extensively recorded. New global ocean and surface temperature records are being established. Drought, desertification, and drought trends are causing food insecurity and accompanying public health concerns in most developing nations due to rising land temperatures. Furthermore, the slightest increase in global sea level poses a significant existential threat and is already causing human displacements. As natural catastrophes become more frequent and severe as a result of climate change, the number of people displaced by these catastrophic occurrences will rise.

Environmental displacement of communities is prominent among climate change's many public health effects and contributes to cascading impacts on mental health and well-being.

Why are migrants vulnerable?

Environmentally displaced people are exposed to increased public health hazards such as overcrowding, poverty, violence, limited economic possibilities, and heightened psychological stresses. Forced migration brings a variety of individual and social trauma associated with loss. A slew of devastating and psychologically debilitating losses, i.e. home, land, crops, equipment, machinery, automobiles, and most significantly, many personal belongings, adds to the mental stress. Critical survival mechanisms break down abruptly, i.e. vocation, livelihood, and professional identification of the individuals suddenly disappear.



Effects on their mental health:

1. It is well documented that trauma exposures in displaced populations result in stress and psychological distress.
2. Those with the most severe exposures may develop diagnosable common mental diseases such as PTSD, major depression, and generalized anxiety disorder.
3. There are several more culturally recognized mental health implications connected with trauma. PTSD, on the other hand, is a well-studied side effect of trauma and violence in disasters.

Interventions:

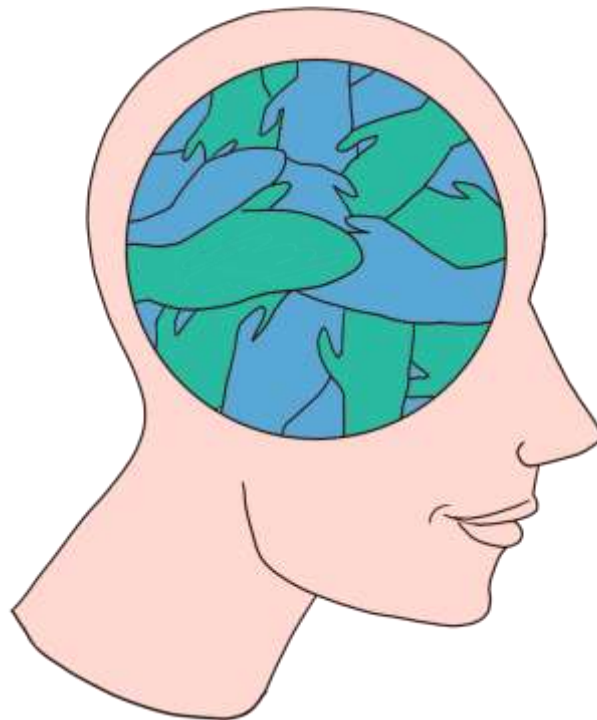
1. Restoring and strengthening social bonds in both source and target communities can increase resilience and mitigate some of the negative mental health impacts of acute and prolonged climate events.

2. A preliminary need assessment can provide timely guidance for planning a coordinated response that focuses on community vulnerabilities. One option would be to offer free psychological support to migrants and other communities affected by climate change.
3. Tele-therapy provides an appropriate point of intervention to alleviate any mental health issues migrants may experience in response to pre-existing climate and weather crises and the cascading effects of COVID-19.



CONCLUSION

One of humanity's most pressing problems is climate change. The implications of climate change on biologically sensitive persons and cultures are a cause of worry for the community. Rising temperatures, floods, tornadoes, hurricanes, droughts, fires, forest loss, glacier melting, river absence, and desertification, as well as the disappearance of rivers, may all cause physical and mental problems in humans. Working collaboratively to establish conditions that promote good mental health, such as fair access to resources, services, and healthy surroundings, can help society achieve greater climate resilience and health equity.



CONTRIBUTOR LIST:

Dr Harshitha H A, Senior Resident, Dept of Psychiatry, NIMHANS

Dr Patley Rahul, Assistant Professor, Dept of Psychiatry, NIMHANS

Ms. Deepika Saini, Project Officer, NIMHANS

Mr Nithesh Kulal, Project Officer, NIMHANS

Dr Akanksha Agarwal, Junior Resident, Dept of Psychiatry, NIMHANS

Dr Ankit Sharma, Junior Resident, Dept of Psychiatry, NIMHANS

Dr Gautam Sudhakar N, Senior Resident, Dept of Psychiatry, NIMHANS

Dr Aishwarya John, Senior Resident, Dept of Psychiatry, NIMHANS

Dr. Vinay B, Specialist Grade Psychiatrist, NIMHANS

Dr Latha K, Assistant Professor, Department of Mental Health Education, NIMHANS

Dr K S Meena, Additional Professor and Head of the Department of Mental Health Education, NIMHANS

Dr Hareesh Angothu, Associate Professor, Dept of Psychiatry, NIMHANS

Dr Geeta Desai, Professor, Dept of Psychiatry, NIMHANS

Dr P T Sivakumar, Professor, Dept of Psychiatry, NIMHANS

Dr Naveen Kumar C, Professor and Head Community Psychiatry Unit, Dept of Psychiatry, NIMHANS. Officer-In-Charge, CoE on CC-MH, NPCCHH, NCDC, MoHFW, GOI.

Dr Suresh Bada Math, Professor and Head Forensic Psychiatry Unit and Officer-In-Charge, NIMHANS Digital Academy, Dept of Psychiatry, NIMHANS

TECHNICAL EXPERT MEMBERS

Dr Vivek Benegal, Professor, Department of Psychiatry, NIMHANS, Bengaluru, Karnataka.

Dr Susanta Padhy, Additional Professor, Department of Psychiatry, AIIMS, Bhubaneswar, Odisha.

Dr Ravi Gupta, Additional Professor and Head of Department of Psychiatry, AIIMS, Rishikesh, Uttarakhand.

Dr Lenin Singh, Professor and Head of Department of Psychiatry, RIMS, Imphal, Manipur.

Dr Ritambhara Mehta, Professor, Department of Psychiatry, Surat Medical College, Gujarat.

Dr Pradeep Saha, Professor, Department of Psychiatry and Director, Institute of Psychiatry, Kolkata, West Bengal.

Dr Yaseer, Professor and Head of Department of Psychiatry, Institute of Mental Health and Neurosciences, Srinagar, Jammu and Kashmir

Dr. K Pathak, Professor and Head of Department of Psychiatry, LGB Regional Institute of Mental Health, Tezpur, Assam

Dr Anil Prabhakaran, Professor and Head of Department of Psychiatry, Thiruvananthapuram Medical College, Kerala.

Dr Poorna Chandrika, Professor and Head of Department of Psychiatry, Institute of Mental Health, Chennai, Tamil Nadu.

Dr Amit Chakrabarti, Officer-In-Charge Centre on Non-Communicable Diseases Indian Council of Medical Research (ICMR) Kolkata.

Dr Rinku Sharma, ADG, DteGHS, MoHFW, Government of India. (Representative from NMHP)

NPCCHH team

Dr Aakash Shrivastava, Additional Director, NPCCHH

Mr Rameshwar Sorokhaibam, Deputy Director, NPCCHH

Dr Sivaprasad Gajjala, Deputy Assistant Director, NPCCHH

Mr Praveen G, Senior Consultant, Climate Change, NPCCHH

Dr Purvi Patel, Senior Consultant, Climate Change, NPCCHH

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