Reducing Human Vulnerability to Heat Stress in Rural Communities of Semi-Arid Maharashtra

POLICY BRIEF: January 2020

Context:

- Summer temperatures in India have been rising over the last few decades, resulting in increased heat-related morbidities and mortalities. Future climate projections for India indicate that heat waves will likely be more intense, have longer durations, and occur more often and earlier in the year. Existing coping strategies appear to be inadequate to protect people from heat related stresses. There is a need for pre-emptive measures to ensure that people are adequately supported to reduce their vulnerabilities.

Key Recommendation:

As of now, Maharashtra does not have a state-level heat action plan. There is a need to develop a comprehensive state-level heat action plan which addresses the needs of rural and urban communities.

Introduction:

Increasing temperature and associated health impacts is an emerging public health concern. In India, 22,562 heat related deaths were reported between the periods 1992 to 2015. Increasing heat exposure is linked to occupational health risks, negatively impacting work productivity. Most studies have attempted to understand the impact of heat stress in urban areas and few occupational settings. There is little evidence on the heat experience, impact of heat exposure and adaptation measures to heat stress in the rural areas. In this context, the study examines heat stress vulnerability of rural communities in indoor and outdoor settings in the semi-arid villages of Maharashtra state.

Objectives:

- To understand exposure to outdoor and indoor heat stress
- Identify the categories of the rural population most affected by heat stress
- Examine various existing strategies employed by communities.

Methodology:

A study was conducted in five villages located in Jaffrabad, Bhokhardan blocks (Jalna district) and Ralegaon block (Yavatmal district) of Maharashtra. The survey involved 285 households to understand the work profile, health related problems, access to health care and coping strategies for managing heat exposure. In addition, interviews and group discussions were conducted with community members and local health care providers. Indoor temperatures were measured using data loggers installed in houses with different roofing types (cement, tin and tiled roof). Automated Weather Station were installed at two study sites to measure outdoor temperature.

Research Results:

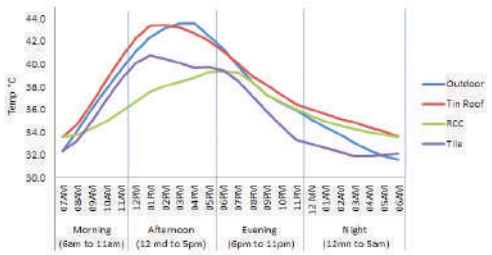

Figure 1: Average indoor and outdoor temperatures (10 May to 5 June 2016)

The Figure 1 shows the indoor temperatures of 20 houses in Sonurli village for the period 10th May to 30th June 2016. As the day progressed, the indoor temperature increased and peaked at around 2 pm. Tin roof houses recorded maximum indoor temperature as compared to RCC or tile roofs. During the peak heat hours (11 am–5 pm), the tin-roofed houses recorded a higher temperature than outdoors.

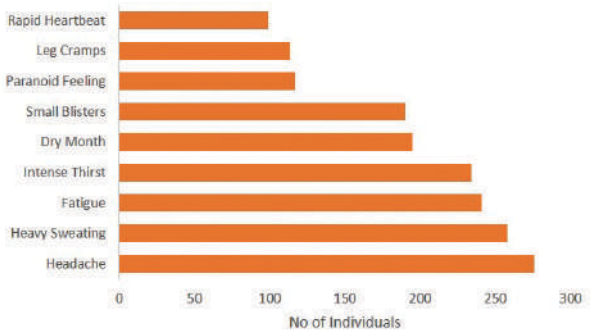

Figure 2: Frequency of self-reported heat-related symptoms

Vulnerability to heat stress was observed by the occurrence of Heat Related Symptoms (HRS). Mild HRS (small blisters, dry mouth, fatigue, leg cramps, heavy sweating, intense thirst, rapid heartbeat, headache, paranoid feeling) and severe HRS (hallucinations, fainting and vomiting) were reported by respondents as seen in Figure 2.

Findings indicate that age, gender, occupation, wealth and pre-existing health conditions were significantly associated with occurrence of HRS. Working men and women (31-59 years) were found to be more vulnerable as compared to all other age groups. Women are exposed to high indoor temperature during cooking and performing domestic chores. The existing coping strategies appear to be inadequate to protect people from heat related stresses.

Policy Recommendations:

Heat Action Plan for rural Maharashtra is required that considers:

- Preventive Measures: Creating awareness about early warning symptoms of heat stress and basic preventive action. Health personnel, particularly those at the village level, need to be capacitated for this.
- Improving housing designs that improve ventilation and the use of low cost measures e.g. crop residue layers on tin roofs to lower indoor temperature thus reducing heat exposure. Government housing scheme- Indira Aawas Yojana should give preference to tile roofs to reduce indoor heat stress.
- Adjusting work hours in summer e.g. in the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and providing drinking water for labourers during work hours. Construction of open community halls to provide space to rest during the mid-day in summer months helps to reduce exposure.
- Rural health infrastructure to be upgraded to handle heat stress related incidences.
- Development of surveillance mechanism to monitor heat related mortalities and morbidity will help to reduce heat related health problems

References:

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Additional source: 'As world warms, it's time to get serious about heat stress: Lessons from India' available at https://bit.ly/2SQyrMF

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