



A Successful Heat Wave Prevention in Ahmedabad Calls for Segregated Health Record: Highlights from Existing Heat Action Plan

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ABSTRACT

South Asia is one of the hot-spots of extreme heat events and associated health risks. As heat waves continue to get harsher due to climate change, South Asia's exposure to them is probably going to increase. After a heatwave in 2010, Ahmedabad implemented South Asia's first heat action plan (HAP). The Ahmedabad HAP can serve as a model for other cities across South Asian nations interested in intervention strategies against excessive heat. In recent years, 2020 and onwards, Ahmedabad's healthcare system faces an extreme COVID-19 crisis which resulted in severe negligence of heat wave-influenced mortality and morbidity cases. Though the city continued to disseminate the necessary information for public heat preparedness from the existing heat action plan, there was no record made separately for COVID-19 and heat stress-related mortality/morbidity by the health department. Thus, due to a lack of heat-related health records, we were unable to track the HAP intervention effect in 2022.

Keywords: HAP, Extreme heat, South Asia, Mortality, Morbidity

MAIN TEXT

India is witnessing record-breaking brutally hot weather in summer (March–May) year after year which poses one of the major public health challenges in the country (Eckstein *et al.*, 2020). The health hazards due to heat waves are likewise being experienced in other parts of the world too. Extreme temperatures can endanger the lives and health of senior citizens and people belonging to lower socio-economic status e.g., people living in poorly ventilated homes, outdoor workers, low-income urban slum dwellers, people with poor options of self-quarantine. The latest India Meteorological Department (IMD) report revealed that India witnessed 280 heat wave days from March 11 to May 18, 2022, the highest in 12 years (<https://csestore.cse.org.in/default/books/state-of-india-s-environment-2022-in-figures-e-book.html>).

Ahmedabad has been the leading city in India for its work on building resilience against extreme heat events. Following the heat wave in the summer of 2010, during which Ahmedabad experienced deadly heat waves, an excess of 1,344 all-cause deaths in the month of May was reported as compared to the average of the same month in 2009 and 2011 (Azhar *et al.*, 2014). In 2013, the Ahmedabad Municipal Corporation (AMC) partnered with the Natural Resources Defense Council (NRDC) and the Indian Institute of Public Health Gandhinagar (IIPH-G) to develop an Ahmedabad Heat Action Plan (HAP) to reduce the health impact of such extreme heat waves on vulnerable populations. Ahmedabad HAP is a comprehensive extreme heat early warning system and preparedness plan (Knowlton *et al.*, 2014). A 2018 study estimated the effectiveness of the Ahmedabad HAP before and after implementation, avoiding 1,190 fewer annual deaths (all-cause) in 2014–2015 relative to a baseline of 2007–2010, after implementing the country's first HAP in 2013 (Hess *et al.*, 2018). The total number of cases (and deaths) in Ahmedabad city

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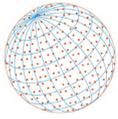
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due to heat stroke was 274 (65) in 2010, 57 (11) in 2014, 23 (8) in 2015, 99 (15) in 2016, 33 (2) in 2017, and 26 (3) in 2018. The effectiveness of HAP is also reflected in heat stroke records from the city in the post-HAP period (2014 and onwards).

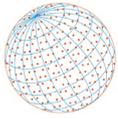
Healthcare systems had a COVID-19 crisis in 2020 and 2021 globally. On one hand, patients were getting treated, and on the other hand challenges like infrastructural problems, higher workload, psychological distress, etc. were there. In 2021, India faced severe heat waves but heat wave-influenced mortality and morbidity cases were neglected due to the COVID-19 pandemic. During the COVID-19 pandemic, even hospitals and clinics were not reporting heat wave morbidity and mortality cases. As a result, there was no reporting of heat wave mortality and morbidity cases during the 2020 and 2021 summer months in all government and private hospitals. Although AMC had advised citizens to stay at home to avoid exposure to extreme temperatures, what about the vulnerable population staying in poorly ventilated houses, low-income slum dwellers, without provisions of cooling devices like AC or coolers, etc.? The authors think that health care systems pertaining to COVID-19 and heat wave should go together. There are various gaps in health care systems like health data availability and transparency for research and policy and we need to understand and integrate them better. The stakeholders should establish systems for improving real-time health surveillance to track heat health data and notify heat stroke and heat stress cases. The mortality data in India are pooled up in such a way that segregating COVID-19 deaths and heat stroke deaths is not possible. The lack of granularity in health data can make health-based studies less effective. Secondly, there should be a system for monitoring total hospital admissions (COVID-19 and non-COVID-19 cases) and total all-cause deaths specifying heat stroke deaths and COVID-19 deaths separately.

With the ongoing health threats from COVID-19, protecting public health is a priority, particularly as more infectious variants of the virus emerge. In the years 2019 and 2020, the COVID-19 pandemic and extreme heat had overlapped during summertime. The AMC was struggling to manage the increasing prevalence of cases of COVID-19 and further provide the vaccine to protect from Coronavirus.

According to the IMD Gujarat data, in Ahmedabad city during the summer of 2022 the daily minimum and maximum temperatures varied from 22.1–29.7°C and 39.6–45.8°C, respectively. The daily mean temperature varied from 25.6–37.7°C. But in 2022, AMC enhanced the alerting system and alerted Ahmedabad city residents of impending heat waves and gave sufficient information, and communicated among government agencies, health officials, emergency response teams, community groups, and media outlets regarding heat wave forecast and color-coded actions during the heat wave through public awareness ads, posters and LED scrolling board, bulk emails, and quickie video. Medical professionals and link workers and other community health professionals were trained to recognize heat danger and offer prevention tips for heat illness. Special heat stroke wards and oral rehydration solution (ORS) corners were arranged in all Municipal Corporation hospitals and Urban Health Centers of Ahmedabad. Other simple adaptation measures for the 2022 heat wave in Ahmedabad were cooling centers, water distribution, green shades near the traffic junctions, and change in work timings, traffic signals remain closed in the afternoon from 1 pm to 4 pm. Furthermore, the municipal corporation initiated the Mission Million Tree Campaign and the on-demand plantation campaign through the AMC Seva application as a mitigation strategy. More than one million trees are planted every year in Ahmedabad city. Oxygen Parks were developed in more than 128 plots across Ahmedabad city; Oxygen Park is a large-scale park where a combination of carefully picked plantations is used to provide clean and oxygenated air.

CONCLUSIONS

Ahmedabad HAP serves as a standard template for many cities and states across India and internationally. In India, the data related to health are limited and even the cause of death is also not properly mentioned in the National register of birth and death record. The granularity of the data can also play a major role in determining the key focus areas for interventions in the future. No doubt it's high time for introspection-what kind of future do we want?



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