

Surviving the 2024 Malaysian Heatwave: Challenges and Recommendations from Wilderness Medicine Perspective

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Abstract

Rapid modernization and expansion of technologies present a dual-edged phenomenon, offering substantial benefits to humanity while simultaneously exerting detrimental effects on the environment through the enhancement of the greenhouse effect, thereby contributing to alarming global warming. Together with the warming of the ocean surface and resurgence of El Niño phenomenon in 2023, temperatures are expected to increase at an alarming rate and precipitating heatwave-related problems that affect not only human health but also the ecosystem, social life, and agricultural productivity, potentially leading to food crises, economic disruptions, and infrastructure strain. It is imperative to enhance our preparedness to mitigate the morbidity and mortality associated with heat waves.

keywords: *Malaysian heatwaves, wilderness medicine, 2024*

INTRODUCTION

Modernization not only evolved from small-scale hunters to agricultural or industrial populations but also caused a global problem of climate change. Technologies may make our lives more accessible and convenient, but indirectly they lead to greenhouse effects, causing alarming global warming, with the global surface temperature reaching 1.1°C above 1850-1900 in 2011-2020.¹ The temperature is expected to continue to rise at an alarming rate. Together with the warming of the ocean surface and re-emergence of El Niño phenomenon in 2023, which is expected to continue this year, it is predicted that there will be more heatwaves will develop globally,² including in our country.

Heatwaves

Heatwaves are one of the natural hazards that affect not only human health but also the ecosystem, social life, and agricultural productivity, potentially causing food crises, economic problems, and infrastructure strain.^{3,4} Although there is no standard definition for it,⁵ it is defined as an increase in the temperature outside the historical average for a given area for at least two or more days. The four heatwave levels, as provided by the Malaysian Meteorological Department, MetMalaysia, are as follows: Level 0: Below 35°C (normal), Level 1: 35-37°C (careful), Level 2: 37-40°C (heatwave), and Level 3: Above 40°C (extreme heatwave). A study of a twenty-four-year period conducted in Malaysia from 1994-2017, analysing the daily maximum temperature data for 17 meteorological stations in Malaysia, revealed a mean temperature ranging from 31.3 to 32.9°C, and the highest value of maximum temperature recorded

occurred at Chuping (40.1°C) on April 9, 1998.⁶ As of April, this year, MetMalaysia had issued heatwave alerts for 47 regions across the country, with seven areas facing severe level two warning - Perlis, Padang Terap, Baling, Hulu Perak, Jerantut and Maran, while the remaining area had issued level one warning.⁷

The Impact of Heatwaves in Southeast Asia including Malaysia.

Countries, particularly in Southeast Asia, are struggling with ferocious heatwaves, causing significant health concerns, issuing of warnings, school closures, forest fires and a reduction in outdoor activities. While there is a globally rising in heat-related mortality, the trend in Southeast Asia remains ambiguous. A descriptive analysis of a tertiary care centre from 2008 to 2020 in Singapore reported that 426 patients had been diagnosed with heat-related illnesses, half of whom required admission, and the 30-day mortality rate was 2 (0.5%).⁸ Meanwhile, at least 61 deaths were recorded in Thailand this year alone.⁹

A press statement from the Malaysian Ministry of Health recorded 45 cases of heat-related illness (HRIs) in Malaysia this year (until 14 April 2024), with 33 cases of heat exhaustion, 11 heat strokes, and 1 heat cramp. The majority of the cases occurred in Perak, Kedah, and Selangor. Two deaths involving a 22-year-old man and 3-year-old boy were recorded this year, and another four patients received intensive care treatment.¹⁰

The Impact of Heatwaves on Wilderness Medicine Training and Outdoor Activities

Wilderness medicine is a relatively new field in Malaysia. Since the establishment of the Special Interest Group (SIG) under the College of Emergency Physicians on 11th March 2022, a few training activities, publications, and talks have been organized. Unfortunately, heat waves have posed a significant challenge, especially if the training is to be conducted on an outdoor basis, hence slowing down the training program conducted by our SIG. Although wilderness education can be delivered indoors using slide presentations or webinars, the essential element of being in the outdoor or wilderness environment cannot be conducted regularly or requires special modification. Teaching wilderness medicine in natural settings not only fosters resilience, team building, and creativity among participants but also provides therapeutic benefits, especially for mental health. However, heatwaves present significant challenges for wilderness medicine educators when determining appropriate teaching method. Additionally, attention

should also be focused on outdoor activities that are at risk due to heatwaves, such as marathons, ultramarathons, sports races, or jungle trekking. Poorly planned events may result in casualties.

Are we prepared enough to deal with heatwaves?

The actual burden of heatwaves in our country remains unknown, as the data collected by the Ministry of Health are not readily accessible to clinicians or academicians. Therefore, it is difficult to perform an in-depth analysis of this phenomenon. Additionally, the disease burden from heat waves is also not included in the National Health and Morbidity Survey technical report. The reporting and monitoring system for heat-related illness must be adequately addressed to understand the burden caused by this problem. With the integration of artificial intelligence, and robust database, identifying hotspots or high-locality cases, and predicting future impacts related to heat waves is imperative. Therefore, a collaborative effort should be made to develop holistic measures to reduce morbidity and mortality related to the heatwaves

Despite the publication of clinical guideline for managing HRIs was published in 2016,¹¹ the awareness remains low, and implantation has been fragmented and incomplete. Although an action plan to manage health risks associated with heatwaves was created in 2021,¹² its effectiveness in improving preparedness among healthcare workers remains uncertain, as the reporting system or action plan has not been updated. From a clinical perspective, diagnosing HRIs could be challenging due to mimicry with other acute clinical presentations or low suspicion among the frontline in emergency departments (EDs) or health clinic. Continuous training in the form of lectures, clinical simulations, drills, and constant reminders should be carried out by the ED management team to ensure that our staff is vigilant regarding the problem. Multi-agency collaboration and training between healthcare workers and relevant agencies such as academicians, ministries and government bodies, policymakers, and rescue teams should also be conducted. In addition, consultation services from clinicians with expertise in detecting and managing HRIs can be developed in order to increase the detection of cases and provide adequate care.

General workers such as construction workers or those working in palm oil plantations are at high risk of developing HRIs. It is unknown whether

they practised suitable preventive measures to prevent heat waves, such as adequate hydration, acclimatization, the use of clothing with a cooling system, and frequent breaks in shadowed areas throughout the working day. A monitoring system should be developed as well, and further study needs to be done in this area. As children are more affected by the HRIs, a few improvements need to be made to ensure that education can continue during the crisis, such as limiting outdoor activities, increasing access to a cold and protected spaces, increasing the number of water dispensers, encouraging them to drink regularly and allowing them to wear clothes that are more hot-weather-friendly.

We need to improve our preventive care measures and disseminate knowledge about preventing HRIs to both healthcare workers and the public, especially those at high risk. Given the widespread use of social media, it should be leveraged to deliver educational content about HRIs in an engaging and interactive manner. Additionally, traditional methods such as posters, health talks, forums and awareness campaigns should be conducted regularly to reinforce these messages.

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